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REVIEWS

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Mutator
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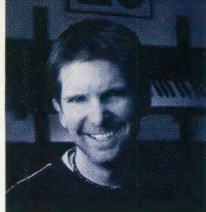
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One Step Forward, Two Steps Back

It's the plug-in standardization shuffle

For those who haven't experienced the bliss of working in a virtual studio environment, let me encourage you to grab a mouse and get involved. No disrespect to hardware — I'm sure I'll always crave real knobs, sliders, tubes, and the like when it comes to certain projects — but the convenience and affordability of having a studio in a computer are just too sweet.

Plug-ins, in particular, have helped fuel the virtual studio's fire. From the usual effects plug-ins (reverbs, delays, compressors, etc.) to esoteric offerings (such as lo-fi mangling tools) and recent entries that model vintage synths and mastering devices, plug-ins are one of the hottest growth markets in the music industry. Easy to see why. If you can't find or afford those coveted vintage or high-end items, plug-ins are the next best thing, and in some cases a *better* thing. Much to my pleasant surprise, many of the plug-ins I've used sound similar to the real instruments they're emulating. Many also allow their parameters to be automated — let's see you do that with a vintage compressor. Beyond just emulation, though, plug-ins can also tackle tasks that few or no dedicated hardware devices can, such as time-compression/-expansion, to name one. So what's not to love about this technology?

I'll tell you. . . . There are far too many plug-in formats out there: TDM, AudioSuite, RTAS, VST, MAS, DirectX, Premiere, and proprietary formats such as those developed for Emagic's Logic Audio. What this means is that if you're a Pro Tools user, for example, you can tap the world of TDM and AudioSuite plug-ins, but the others are off-limits. And while some programs accept multiple plug-in formats, the problem is that you can't have all plug-in types up and running simultaneously on a single audio channel (not at presstime, anyway).

When Steinberg announced that they'd discontinued development on a TDM-compatible version of Cubase, I had to wonder if this was a good thing or not. Arguments could be made for both points of view. Pro, perhaps, because it tightens the spotlight on VST. With computers getting ridiculously fast these days, native processing is no longer a thing for entry-level users. Then again, those who plunked down mondo bucks on TDM hardware can't help but wish things would sway Digi's way. Is the cup half empty or half full? Even though I'm a TDM-lovin' fool, I can't help but think native processing is the wave of the future. Whatever happens, I hope the players in the plug-in game put their proprietary pride aside and do what's right for musicians by agreeing on one or two standards.

In *Keyboard* staff news, I'm pleased to announce that associate editor **Ernie Rideout** will be moving to New York and setting up a satellite office for us there. The *Keyboard* staff has been centered in Silicon Valley for 25 years, and this will be the first time a full-time editorial staffer has established a presence for us on the opposite coast. We're looking forward to the expanded coverage and vibe that this move will bring us. Ernie plans to comb the Manhattan music scene like a hungry hound and share his interviews and insights with us every month.

Actually, two *Keyboard* staffers are moving east. In addition to Ernie, senior technical editor **Mitch Gallagher** will be setting up shop in the Big Apple, but Mitch's move is a bittersweet one for us. Sweet, because Mitch has been named the new editor of *EQ*, our sister magazine. (Way to go, Mitch; you'll rock that chair!) Bitter, though, because Mitch has done a remarkable job as *Keyboard*'s tech guru. We're gonna miss him, to say the least. Stay tuned for info on his replacement.

Until then. . .

Greg Rule
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KEYBOARD®

VOL. 26, NO. 3 (ISSUE #288) MARCH 2000

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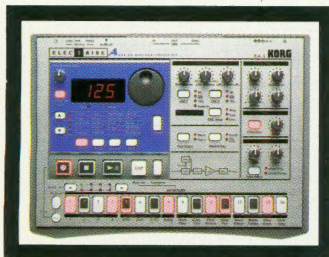
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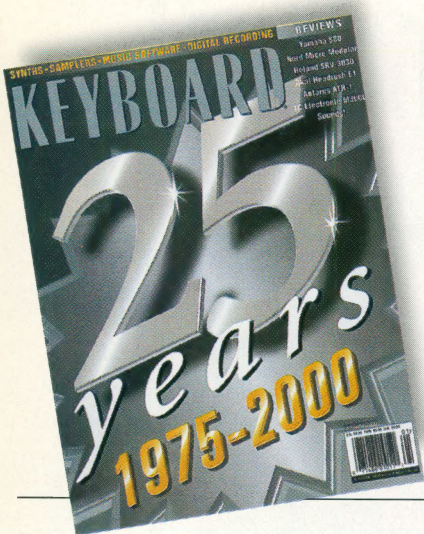


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KEY INFO #2



Changing of the Guard

Hi, Greg! I've been a loyal reader of *Keyboard* for about 16 years. I make my money as a production manager of a digital printing plant in New York City and as a weekend warrior with a society band. Through the years, I've come to rely on *Keyboard*. I'm never made to feel as though my subscription money is not well spent. I read the magazine cover to cover and have read many of your articles. I look forward to future issues. I thank *Keyboard's* preceding editors, and I congratulate you and the new staff members.

TONY CARDINALE, via email

Time Line Hiccups

I have been an avid reader of *Keyboard* since I got my first Yamaha DX100 and CX5M computer back in the mid-1980s. In your 25-year timeline [Jan. '00] you say the Atari ST was the only computer to date to include MIDI jacks. My CX5M also has built-in MIDI jacks, which allowed me to run my massive eight-note-polyphonic (!) step-time-only sequencer. Ahh, the good old days.

JOSH GLOVER, Toledo, OH

Your latest issue has a great deal of interesting historical information. But there is a slight misprint on your timeline. On page 46, you mention that the first *Keyboard* Soundpage was a recording by Bill Evans. I still have some of those old Soundpages, and was curious to find out if this was one that I still happened to have. In the process, I noticed that the actual first Soundpage was not Bill's "When I Fall in Love" but Denny Zeitlin's "The Herald."

ERROL RHODES, via email

Before you give the award for the first digitally scanned keyboard to E-mu ["25 Technology

Milestones," Jan. '00], you should review Barry Carson's March '95 *Keyboard* article on "Vintage RMI." Wasn't George Watson, the Rockwell engineer who helped develop the Allen Digital Computer Organ, the inventor of digitally scanned keyboards? Allen Organ invented digital synthesis technology in 1971, years before Fairlight, E-mu, or anybody else used it.

BILL ROBERTS, via email

Thanks for the photo of the MidiVox MIDI Dog Collar in the January issue. We were surprised to see MidiVox reported as being gone since 1992 due to our too-high price. Since we are still cheaper than most keyboards, we are still MIDI-barking quite well. The BioSensor neck-band and both motherboards have been upgraded completely since 1992. The price is now \$1,295, and our website can be found at www.healingmusic.net.

TIMOTHY KELLY, via email

Invisible Giants

After almost 12 years reading and enjoying your magazine, I have finally been compelled to write the letter I've always wanted to send you. Your "25 Giants of Keyboard Music" [Jan. '00] was the last straw. A true giant of keyboard music was omitted again. He goes by the name Vangelis. Perhaps you've heard of him? The life work of Vangelis boggles the mind. We've all heard Jean-Michel Jarre's work from the late '70s. Great stuff. But can you tell me why there isn't a full-time column in your magazine devoted just to *Albedo 0.39*?

CARL TIETZE, via email

I would have added Nick Rhodes (Duran Duran) and Howard Jones, whose influence easily surpassed anyone else from the '80s era. And let's not forget Dave Brubeck!

DAVE KURZ, Mankato, MN

I'm a bit shocked that the likes of Alex Patterson, Jack Dangers, and Richard D. James didn't make the cut. I'm sure the *Keyboard* crew didn't just forget about these guys, so there must be a reason why they weren't included. Just wondering what it was.

SHAWN CURRIE, Chicago, IL

Shawn — If you know a way to shoehorn 200 deserving names into a list of "25 Giants," please let us know.

MIDI Timing

The Digital Performer ad on the back cover of your Jan. 2000 issue boasts MIDI timing

accuracy of 1/3 millisecond (.33ms). That's certainly amazing. Maybe even too good to be true? According to my calculations, it takes .96ms to transmit or receive a single MIDI note-on. You simply can't time-stamp the data faster than it comes in.

JIM ROBERTSON,
Edwards Air Force Base, CA

Jim — Thanks for bringing this up: Others may have wondered the same thing. We haven't had a chance to bench-test Mark of the Unicorn's MIDI Time Stamping technology, so we can't independently verify their claim, but the level of accuracy they're touting is not at all far-fetched. You're right that a MIDI note-on is almost 1ms long. But MIDI is an asynchronous protocol, which means that the leading bit in the first 10-bit MIDI byte of an isolated note-on message could be received (or transmitted on playback) at absolutely any time.

With a fast enough computer and the right software and MIDI interface hardware, you could theoretically achieve much greater than .33ms accuracy in time-stamping individual MIDI events. But there wouldn't be much reason to bother tightening the screws past .33ms, because any greater accuracy will be lost in the "noise" of the rest of your MIDI system. Many of today's MIDI synths can't start a note with much less than .33ms of slop. Even more important, the serial nature of MIDI transmissions means that you can't send even two notes down a single MIDI cable at the same time. If the software has time-stamped two notes with nominal start times less than 1ms apart, the second note-on event will be delayed by as much as 1ms. By the time you stack up multi-note chords on several MIDI channels and layer in some controller data, you'll be lucky to achieve better than ± 5 ms accuracy in the playback of dense passages, no matter how tight your software is.

Steamed

I'm gonna blow off some steam here. I hope you don't take it too harshly, because I've gotten a lot out of your magazine over the years. However, certain trends in electronic music are getting out of hand.

1. Sample CDs must die. As if electronic music doesn't have enough formulas and clichés, now we're told that it's legitimate to compose a song by layering a few sample loops.

2. All-in-one "groove boxes" must die. Now every 17-year-old raver thinks they're not only a DJ, but a musician too. Just because you can press "play" doesn't make you a musician.

3. Virtual analog must die. If you want an analog synth, buy an analog synth. ➔

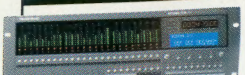
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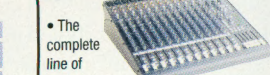
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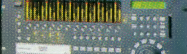
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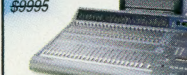
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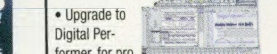
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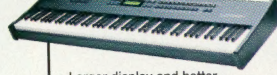
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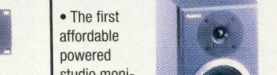
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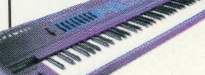
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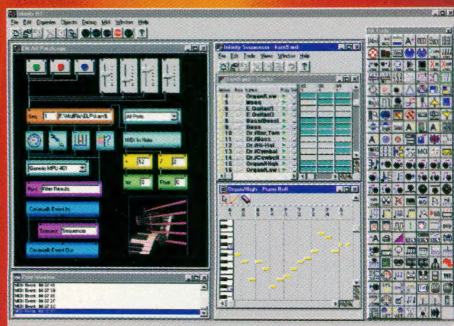
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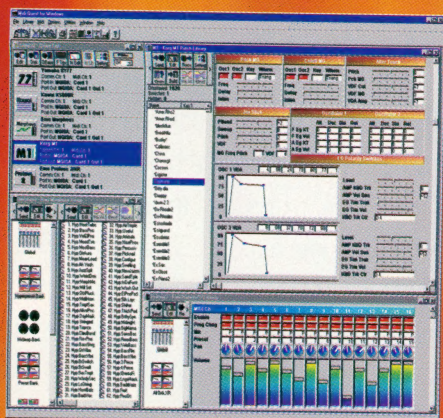
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- ▼ You can even play back Midi Quest files right in Cakewalk!

Midi Quest Supports...

Aka/Mb76 Alesis D-4, DM5, HR-16, HR-16B, MidiVerb 3, MidiVerb 4, NanoBass, NanoPiano, NanoSynth, OS6, OS7, OS8, OSR, QuadraSynth, QuadraSynth S4, QuadraSynth Plus Piano, QuadraSynth S4+, QuadraVerb, QuadraVerb Plus, QuadraVerb GT, QuadraVerb 2, SR-16, ART Dr1, BOSS DR-5, DR-660, SE-50, SE-70, Casio CZ101, CZ1000, CZ3000, CZ5000, VZ1, VZ10m, Creative Labs WaveBlaster, Digital MX-8, Digitech DSP128, DSP128+, DSP256, GSP21, GSP-2101, IPS-33B, TSR-24, Valve FX, Emu Carnival, Classic Keys, Launch Pad, Morpheus, MPS, MPS Plus, Orbit, Orbit v2, Planet Phatt, Procussion, Proteus 1XR, Proteus 1 w/Protologic, Proteus 1 w/Orchestral, Proteus 2XR, Proteus 3XR, Proteus FX, Sound Engine, Ultra Proteus, Vintage Keys, Vintage Keys +, Ensoniq DP2, DP4, EPS, ESO-1, ESQ-M, KMX-16, KMX-8, KS-32, KT-76, KT-88, Mirage, MR61, MR76, MR-Rack, SD-1, SQ-1, SQ-2, SQ-80, TS-10, TS-12, VFX, VFX-SD, VFX-SD II, Eventide Harmonizer, Evolution EVS-1, Fender/Rhodes Chroma, JL Cooper Fader Master, MSB-1620, MSB-Plus, MSB Rev2, PPS-100, Synergy, Kawai Omega, K1, K1R, K1 II, K3, K3 m, K4, K4R, K5, K5-m, K5000S, K5000R, K11, R-50, R-100, Spectra, XD-5, KMX KMX MIDI Control, KMX 8x8, Korg 01W, 01W PRO (X), 01RW, 03RW, 05RW, A4 Guitar, A4 Bass, DDD-5, DS-8, DSS-1, DVP-1, DW6000, DW8000, EX8000, EX8000 II, IZ-13, I4, I5, M1, M1EX, M1R, M1REX, M1+1, M3R, N1, N1R, N5, N5EX, N261, N364, NS5R, NX5R, Poly-6, Poly800, Prophecy, SDD-3300, SG-ProX, SG-Rack, S-3, T1, T2, T3, Trinity, Trinity Plus, Trinity Pro, Trinity Rack, Wavestation EX, AD, ISR, X2, X3, X5, X5D, X5dr, Z1, Z1EX, 707, Kurzweil K2000, K2000R, K2500, K2500R, Lexicon LXP-1, LXP-5, LXP-15, MOTU 7s, Oberheim Matrix LXP-1, Matrix6, Matrix6R, Matrix12, Xpander, Octave Plateau Voyetra8, Peavey DPM3, DPM-V3, Spectrum Bass, Spectrum Bass II, Spectrum Filter, Spectrum Organ, Spectrum Synth, Rane MAP-33, MPE14, MPE28, MPE47, Rhodes Model 660/760, Roland A-50, A-80, A-880, Alpha Juno-1, Alpha Juno-2, CM-32/32P/64, D-5, D-10, D-20, D-50, D-550, D-70, D-110, DEP-3, DEP-5, E-660, GM-70, GP-8, GP-16, GR-1, GR-09, GR-50, GS (ALL GS compatible instruments), GX-700+, JD-800, JD-990, JP-8000, Juno-106, JV-30, JV-80, JV-880, JV-90, JV-1000, JV-1010, JV-1080, JV-2080, JX-8P, MC-303 Groove Box, ME-10, MGS-64, MKS-80, M1-32, PMA-5, Pro-E, P-330, RA-50, RAP-10+, R-5, R-70, R-8, R-8II, R-8m, S-50, S-30, S-550, SCC-1, SC-50, SC-55, SC-55 MkII, SC-35, SC-155, SCP-55, SC-88, SC-88VL, SK-50, Sound Expander (M-BD1, M-PC1, M-VS1, M-OC1, M-SE1), SPD-11, Super Jupiter, TD-5, TD-7, U-110, U-20, U-220, XP-10, XP-50, XP-60, XP-80, Sequential Drumtraks, MultiTrak, Prophet 10, Prophet 5, Prophet 600, Prophet T8, Six-Trak, Tom, Turtle Beach MultiSound, Voice DMI-64, Waldorf Pulse, Microwave, Microwave v2.0, Microwave II, Microwave EX, Yamaha DMP7, DX1, DX5, DX7, DX9, DX7IID, DX7IIDF, DX7S, DX11, DX21, DX27, DX27S, DX100, FB01, KX-76, KX-88, MPE4, MU50, MU80, MU100R, RX11, RX17, RX21L, RX7, SPX90, SPX900, SY22, SY35, SY55, SY77, SY85, TG33, TG55, TG77, TG100, TG500, TF01, TX7, TX802, TX216, TX816, TX81Z, V50, W5, W7, 360 Systems Midi Patch.

letters

NOTE FOR ALL "CREATIVE OPTIONS" FANS

After 14 years in *Keyboard*, Creative Options is taking wing as an independent website. If you'd like to keep up with Connor Freff Cochran's monthly explorations into creativity and life, you can do so at www.freff.com. You can also reach him by email (connorfc@primenet.com) or regular mail (10061 Riverside Dr. #116, Toluca Lake, CA 91602).

4. I don't give a damn about the latest \$4,000 workstation or ultra-rare vintage phallic symbol. I've gone hungry for months at a time to put together *the meager studio that I now have*. Technology is great, but at the end of the day it's creativity and inspiration that really matter. I've heard incredible music made with humble equipment, and I've heard incredibly bad music made in full-blown professional studios. When you interview musicians, put the gear list in a sidebar and focus the interview on what music means to them, where they find their inspiration, etc.

TRAVIS MILLER, via email

Shredding

You guys make me so mad I could spit. I keep subscribing to your magazine for fear of missing the really cool issues. So you send me the 25th Anniversary issue, and all at once it hits me: I'm still going to have to buy a newsstand copy! After devouring this issue for the fifth time, it looks like hell. I can't pass it on to my grandkids in that condition, can I? Oh, well — happy anniversary anyway.

DAVID G. PIHL, via email

Correction

In the *Music Technology Buyer's Guide*, we listed incorrect contact information for NemeSys Technology, makers of the GigaSampler software for Windows. The correct information is as follows: 13625 Pond Springs Rd., Ste. 202, Austin, TX 78729; phone 512-219-9181, fax 512-219-9029; www.nemesysmusic.com.

Don't Be A Stranger!

Tell us your hopes, your dreams, your horror stories. It's eeeee-Z. Keyboard's editors can be reached via email at keyboard@mfi.com and by snailmail at Keyboard Letters, 411 Borel Ave., Ste. 100, San Mateo, CA 94402, or you can steer your Web browser to Keyboard Online (www.keyboardmag.com) and click on "contact us."



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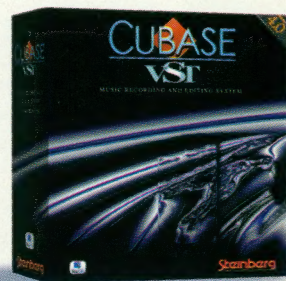
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spotlight

WENDY CARLOS
SWITCHED-ON BOXED SET



Wendy Carlos

Switched-On Boxed Set

Those who've been waiting for Carlos's groundbreaking Moog modular masterpieces to be released on CD can rejoice — they're here at long last! *SOBS* is an extravagantly packaged four-CD set with two thick booklets containing loads of photos and detailed accounts of the makings of the originals. *Switched-On Bach*, *The Well-Tempered Synthesizer*, *Switched-On Bach II*, and *Switched-On Brandenburgs* all appear in their entirety, remastered to reveal every intricate nuance. The first three discs each

feature a concluding track with Carlos's narration and examples of embryonic and failed attempts at what became her beautifully synthesized renditions of some of J.S.'s finest works. Neither classical aficionados nor synthesists should hesitate to add this essential collection to their libraries. MARK VAIL

(East Side Digital, www.noside.com/esd)

Bennie Maupin & Dr. Patrick Gleeson

Driving While Black

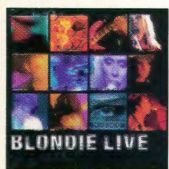


Imagine *Bitches Brew* era Miles updated with jungle and hip-hop grooves. It's a delectable mixture: Maupin's passionate sax lines are given a perfect setting by Gleeson's Rhodes comping, rhythm tracks, and subtle synth effects. The mood combines after-sunset energy and mystery in a very listenable way. *Driving While Black* was a 1998 release, and may be hard to find, but it's worth searching for. JIM AIKIN

(Intuition/Schott Music & Media, dist. by Allegro, www.allegro-music.com)

Blondie

Blondie Live



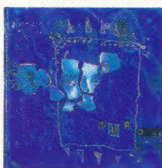
After a 17-year hiatus, Blondie has emerged with two releases in less than a year. Following on the heels of *No Exit* comes a greatest hits collection performed

live during the band's recent world tour. Although Debbie Harry's vocals aren't as polished as we recall, *Blondie Live* is a clear reminder of the band's innovativeness in various musical styles, from punk and pop to reggae and rap, during the late '70s and early '80s. The 17-track album mixes former number one hits with newer material, and features the group's four original members, including keyboardist Jimi Destri. Such classics as "Call Me," "One Way or Another," "Rapture," and "Dreaming" are certain to bring back some dancefloor memories. DEBBIE GREENBERG

(Beyond Music, www.beyondmusic.com)

Geoff Keezer

Zero One



Not many jazz pianists are eager to cross the great divide and plunge into the wilderness of electronics, but Keezer has no qualms. His new CD is mostly just what you'd expect if I said "solo piano." His keyboard style runs to rich, consonant harmonies, rhythms so solid they owe more to Bruce Hornsby than to Bill Evans, and restlessly probing lead lines. But "Sleep Fly Song" is a misty ambient exploration in which we hear only the warm, dark reverb return while the piano plays *tremolando* block chords in the other room. And in the intro of "Fractured," the piano chords are flipped so they play backward, providing a harmonic wash. Later in the same tune, he overdubs a chord comp by strumming the inside of the piano. The rubbery rhythm riff sounds like a synth, but the liner notes indicate that piano samples were the only sound source used. For pure keyboard artistry, *Zero One* is a must-hear. JIM AIKIN

(Dreyfus Records, www.dreyfusrecords.com)

Tim Hagans

Animation•Imagination



Noted bebop trumpeter Hagans takes an experimental/improvisational excursion into the drum 'n' bass world. He's effectively accompanied on Yamaha and Nord Lead synths by Tribal Tech's Scott Kinsey, who was featured in our Feb. '99 Master Class, as well as a list of contributors that includes Kurt Rosenwinkel on guitar, David Dyson on bass, and Billy Kilson on

drums. Trumpet is used throughout as the topping to a mostly energetic, sometimes soft and slow, sometimes spaced-out series of tunes that also reach into the funk, fusion, and swing realms. MARK VAIL

(Blue Note, www.bluenote.com)

Mitch Tobias

Chronic Bliss



I had the hardest time removing this superb pop CD from my player. Tobias has an excellent tenor voice, he composed all the memorable tunes, and he plays choice guitar, piano, EP, Clavinet, and synth parts. Rob Burger provides the juicy Hammond organ and Wurlitzer lines. This first-rate production is the first release for Tobias, but it's incredibly well done. I can't wait to hear more. MARK VAIL

(Road Apple Music, www.chronicbliss.com)

Kraftwerk

Expo 2000



The bad news... *Expo 2000* isn't a full-length release. It's a single with a couple of remixes. The good news... it's fresh Kling Klang material from Ralf and Florian.

Hooray! Written for the millennium change-over, "Expo 2000" has elements of classic Kraftwerk (sixteenth-note synth sequences, spiky electro percussion, and vocoded vocals) intertwined with more modern, glossy synth textures and pads. Overall, the mix is sparse, with plenty of breathing room, so don't expect to be steamrolled. The remixes are equally sparse and hypnotic. There's an extended version of the radio edit, a slightly uptempo mix, and a percussionless chill-out version to close the disc. I wish the remixes were more extreme, but I still can't stop playing this single. Long live Kraftwerk. GREG RULE

(EMI, www.emimusic.de)

Orbitronik

My Computer My Stereo

Experimental bedroom techno by (according to the liner notes) two musicians who have never met. Brian Ladd and Scott Gibbons are fond of bouncy analog beatbox beats, which collide with ominous grinning and burpling noises in a way that's low-key, yet subversive. I like it, but I'm weird. JIM AIKIN

(Thousand, <http://nomusic.interspeed.net/orbitronik>) ■



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VOCALIST VR

KEY INFO #23

Vocal Harmony Solutions

How Sampling Got Its Groove Back

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the curious,
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and those who
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They can now use

Groove Control™

Independent control over
tempo, pitch, pattern
and feel, on live, stereo
drum loops.

It's here. It's shipping.

Now the groove
is in *your* pocket.



TranceFusion



Swirls, sweeps, textures and delirium! A bottomless well for remixers, electronica gurus and scorers, this disc features huge, evolving swishes and glides perfect for transitioning from one groove to the next. Tons of climbers, noise and percussion sweeps, and spectral effects ranging from 3 to 30 seconds long! You'll also get thick lasers and stabs, trippy arpeggios,

unheard-of textures, lunacy and vocal madness. "This is a product whose time has come... awesome... TranceFusion's creators certainly knew what they were doing..." -KEYBOARD 10 of 10 rating.

Key Buy Winner!

CD-Audio \$99

CD-ROM \$199 (includes Audio CD)
Akai/Emu/Kurzweil, Roland, SampleCell

Double Platinum Drums



JAM-PACKED multi-disc set! Multi-Platinum record winners, producer

John Boylan and drummer **Michael Botts** have put together the smartest, most tightly assembled collection of drum loops to date. Phenomenally well-recorded and mixed in true stereo with the same high quality you expect from platinum records. These acoustic kits

are played with raw rockin' energy and plenty of feel. Loops and Hits. Dry and Room. Intros, Fills and Ends for complete tracks!

CD-Audio 2-disc set \$129

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Akai/Emu, SampleCell,
Roland, Kurzweil

Vintage Timetraveler



This disc is packed with the coolest vintage sounds from the 60s, 70s and 80s. Features B3 Organs, Distorted Leslie Organs, Vox Continental, Farfisa, Optigan, Orchestron, Mellotron, Novatron, Chamberlins, Wurliizers®, Rhodes®, RMI, Pianet, Clavinet, Arps, Moogs, Prophets, Jupiters, PPG, OSCar, Cleeman, Modular Synths. Plus, Vibrato Fuzz Guitar Stack, Talk Box Guitar, Various Guitar FX, Ricky 4001 Bass, Fender 62 P.

Bass, Hofner "Beetle" Bass, Vintage Acoustic Drum Kits, Classic Drum Machines, more.

"Remarkable!" -KEYBOARD

CD-ROM \$199
Akai, Roland, Emu EOS, Kurzweil, SampleCell
Call for format availability

Skippy's Big Bad Beats

From producer/programmer **John "Skippy"**

Lehmkuhl, one of the true gurus of groove, comes an explosion of unique, hi-fi, funkified drum loops. Skippy uses his wacky imagination to create **hip hop**, **trip hop**, and **dance** grooves that come in a variety of flavors, including smaller mixes, no-kick, no-snare, and even breakdown versions! Plus, this library is entirely **Groove Control®** activated, meaning you can load any of these grooves into your sampler and have completely **independent control** over

tempo, **pitch**, and even the **feel** of the grooves, using just your sequencer and sampler. Look for this amazing advancement, exclusively on upcoming ILIO and Spectrasonics products, to put you in charge of your groove, instead of the other way around.

Total control. Slammin' loops. Don't miss these Biggest and Baddest of Beats!

CD-Audio (without Groove Control) \$99

CD-ROM (with Groove Control) \$199
(Includes sampler CD-ROM and Audio/Data CD)
Roland, Akai/Emu, Kurzweil, SampleCell



Virtuoso Strings



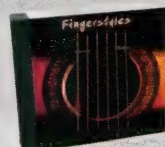
The Virtuoso Series Strings by Kirk Hunter is the first significant new string library to arrive in three years. Recorded in LA by top musicians, it offers a variety of articulations previously unavailable, like **grace-note slides** and **repeated notes**. Plus various **vibrato** styles, a true **Sordini**, **hard and soft attacks**, **half and whole step trills** and much more! It features Violins with 24, 8, 2 players, and solo, Violas with 16 players, Cellos with 10, 6, 2 players or solo, and

Basses with 5 players. A whole new category of string library!

"These are the smoothest and most ambient sampled strings I've ever heard! The programming is really creative. I can now finally get some really expressive performances from a string sample library!" - David Newman, Academy Award Nominated Composer

CD-ROM Multi-Disc Set \$995
Akai, Roland, SampleCell, Kurzweil, Emu EOS

Fingerstyles



The most inventive and useful approach to sampling Acoustic Guitar. Fingerstyles

consists of Guitar Patterns, Melodies, Cadences and Endings arranged in construction kits which can be assembled and overlaid to create complete seamless tracks. A myriad of styles is included, from New Age to Rock. Beautifully played and recorded, it's the perfect solution for composers on a schedule. You won't believe the realism!

★★★★1/2 "The results that can be achieved using this disk are both beautiful and utterly convincing..." -SOUND ON SOUND

CD-Audio \$99

CD-ROM \$199 (includes Audio CD)
Akai/Emu, Roland, Kurzweil, SampleCell

Interactive Drum Kits



All Acoustic Drum Kits with a mega multi-sampling of kicks, snares, toms, hats and cymbals, from old Ludwig®, and Gretsch® sets to new top of the line Pearl®, and Drum Workshop® kits. All hits (no loops). These are extremely realistic drums that you can wack from your keyboard or with your drum pad/triggers. The hits were performed by great players like Toss Panos (Toy Matinee) and Nick D'Virgilio (Tears For Fears, Genesis). Interchangeable snare

programs feature 20 to 50 hits per snare for realism from center, to edge, to rim!

CD-ROM \$199
Akai, Roland, Emu EOS, Kurzweil, SampleCell
Call for format availability

Distorted Reality 2 "Darkness & Light"

The completely new adventure in sonic dementia from producer

Eric Persing is here at last! DR2 was created with the very latest in sonic sculpturing technology. Spinning metallic textures, singing oceans, vast amounts of unique loops (50-480 BPM!), impacts, pads, subsonic low-end and the

many joys of feedback only begin to describe the wonderful noises in this collection. If you are a fan of volume 1, your sonic arsenal is simply incomplete without "Darkness & Light."

"Spectrasonics had a lot to live up to with DR2, and they didn't disappoint!"
—KEYBOARD **Awarded Key Buy!**

★★★★—SOUND ON SOUND

CD-Audio \$99

CD-ROM \$199
Roland, Akai/Emu, SampleCell, Kurzweil

Hans Zimmer Guitars Volume 2

This brilliant follow-up to Volume 1 raises the bar in recording, sampling

and programming techniques, perfected by veteran sound designer, Bob Daspit. These instruments feature velocity switching for both up and down slides, and an intuitive new method for controlling vibrato with dynamics. It's beautifully

programmed and a thrill to play. Volume 2 features Jazz Hollowbody Guitar, Lap Steel Slide Guitar, Electric Baritone, Flamenco Nylon, and a killer new Steel String Acoustic. Plus, check out the rare Middle Eastern, South American and other world instruments like the Charango, Mandolin, Cavaquinho, Cuatro, Oud, Saz, Electric Sitar, Cumbus, and Yayli Tambur. All are amazingly captured in this stunning new release!

★★★★★ "...a must-have disc for anyone needing first-class plucked instrument sounds... this collection deserves all five stars."
—SOUND ON SOUND

CD-Audio \$99
CD-ROM \$299
Roland, Akai/Emu, Kurzweil, SampleCell

Bizarre Guitar

Sound designer **Eric Persing** and guitarist **Peter Maunu** blaze a new trail of sound design with guitar. It features the extreme contrasts of breathtakingly beautiful ambience beds and searing harmonic slashes, bowed guitar, strange funk and unsettling washes. Created with tape loop techniques, e-bow, the Roland VG-8, and cutting edge signal

processing tricks, you won't believe your ears. The CD-ROM version includes selected Groove Control™ loops.

"...The range of sonic ideas is vast... brings to mind the dreamlike soundscapes of Fripp and Eno... an aural addict's dream come true."
—KEYBOARD

"...meticulous attention to detail... perfectly suited to ambient and film music... Bizarre Guitar will appeal to those who like Distorted Reality, providing a wealth of strange and beautiful sounds."
—SOUND ON SOUND

CD-Audio \$99

CD-ROM \$199
Includes sampler CD-ROM and Audio/Data CD
Roland, Akai/Emu, Kurzweil, SampleCell

Retro Funk

Spectrasonics takes Retro into the future! Producer **Eric Persing** has created a collection of Classic live drumming with serious feel, vintage sonics and a huge variety of original drum grooves and fills from four incredible drummers! These authentic sounding loops are ultra-flexible,

bringing that magic "vibe" to any modern track. And with Groove Control, the grooves are at your command, effortlessly blending their timing and human feel to match your music. It's scary how quickly you can sound like a remix genius!

Intros, Fills, Breakdowns and Variations are provided along with separate Claps, Cymbals and funky live Percussion loops too! This massive stash of grooves is destined to be another Spectrasonics legend.

CD-Audio (without Groove Control™) \$99

CD-ROM (with Groove Control) \$199
Includes sampler CD-ROM and Audio/Data CD
Roland, Akai/Emu, Kurzweil, SampleCell

Burning Grooves

Finally, a drum library that delivers maximum impact.

Killer kits & blazing live grooves laid down by L.A. flame-thrower **Abe Laboriel Jr.** (k.d. Lang, Seal, Jeff Beck), with creative remixes by producer **Eric Persing**. If you're looking for attitude,

search no further!

★★★★★ "A slamin' combination of drum kits & loops... Sizzling cymbals & punchy drums... Expressive & realistic kits... killer beats... rock-solid playing... Excellent."
—KEYBOARD

"The quality of both the playing & recording is first class... Impressive!"
—SOUND ON SOUND

★★★★—ELECTRONIC MUSICIAN

CD-Audio \$99 (grooves only)

CD-ROM \$199 (grooves and kits)
Roland, Akai/Emu, Kurzweil, SampleCell

Liquid Grooves

Now, more "liquid" than ever!

The unique and inspiring grooves from the timeless library "Liquid Grooves" are now available in a Groove Control™ version. This revolutionary new method allows you to mix and match grooves in any tempo, and will follow tempo changes from your sequencer! Groove Control also allows you to change the pattern, feel and pitch of the rhythms to your music. Imagine

being able to tune the Wavedrum™ grooves to the key of your song in real-time, without changing the rhythm! Program your own original patterns and fills with the same sounds and mixes from this library!

Existing Liquid Grooves CD-ROM users can upgrade to the new Groove Control version.

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Roland, Akai/Emu, Kurzweil, SampleCell

Call about our special Upgrade price!

Bass Legends

Marcus Miller, John Patitucci & Abraham Laboriel present

their coveted electric and acoustic basses & grooves on this critically-acclaimed 650 meg collection.

TRIPLE ★★★★★ review
"...a truckload of great multisampled basses... Definitely put this one

on your list of must-haves!"
—KEYBOARD

"...superb... well organized, exquisitely recorded, and brilliantly performed."
—ELECTRONIC MUSICIAN

CD-Audio \$99 (grooves only)

CD-ROM \$299 (basses and grooves)
Roland, Akai/Emu, SampleCell, Kurzweil

Symphony of Voices

A massive FOUR CD-ROM SET, which includes a variety of multisamples, phrases & fx from some of the world's most prestigious singers.

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multisamples and phrases
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• **Gregorian Men's Choir** Multisamples and ancient Chants
• **Lush Multitracked Pop Stacks** "Enya-esque" pads

"... simply stunning... without a doubt the ultimate library of choral samples." —KEYBOARD 10 of 10 rating. **Awarded Key Buy.**

★★★★★ "...the definitive vocal sampling work."
—SOUND ON SOUND

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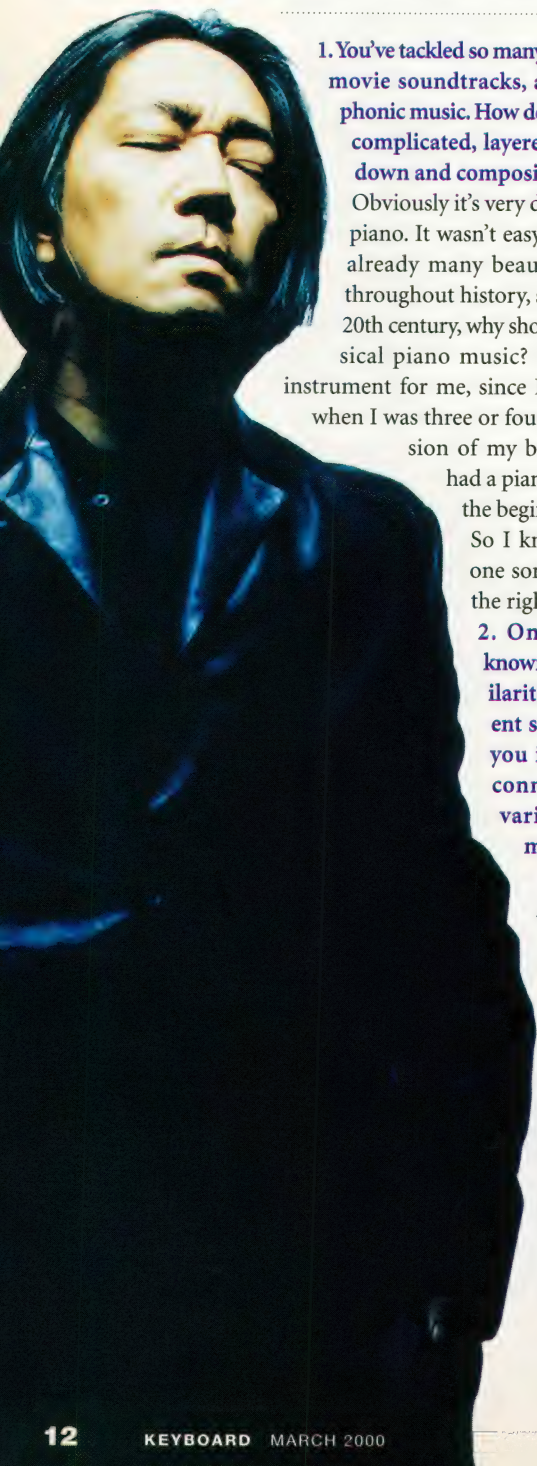
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musicmakers

5 Questions with . . . Ryuichi Sakamoto

To say Japanese composer Ryuichi Sakamoto is a multifaceted musician is like saying a Porsche 911 is a type of car. A graduate of Tokyo National University for the Fine Arts & Music and a co-founder of the internationally-acclaimed Yellow Magic Orchestra, Sakamoto is an artistic chameleon whose credits include world pop albums (*Neo Geo* and *Beauty*), 13 films (including co-scoring the Oscar- and Grammy-winning *The Last Emperor* with David Byrne and Cong Su),

and theme music for the opening ceremonies of the 1992 Summer Olympics in Barcelona, Spain. Furthermore, he's an actor (*Merry Christmas Mr. Lawrence* and *The Last Emperor*) and a model (for such retailers as Barney's New York and The Gap). A jack of all trades, and definitely master of some, his latest releases are the solo piano disc *Back to the Basics* and a collection of symphonic music recorded on a 1997 Japanese tour entitled *Cinemage*. Both are now available on Sony Classical.



1. You've tackled so many genres: pop music, movie soundtracks, and classical symphonic music. How do you go from more complicated, layered music to sitting down and composing at the piano?

Obviously it's very different writing for piano. It wasn't easy, because there are already many beautiful piano pieces throughout history, so at the end of the 20th century, why should I compose classical piano music? Piano is a special instrument for me, since I started playing it when I was three or four. It's like an extension of my body. But I haven't

had a piano solo album since the beginning of my career. So I knew I would make one sometime, and it was the right time to do it.

2. One thing you are known for is finding similarities between different styles of music. Do you instinctively find connections between various cultures and musical styles or do you seek them out?

I studied ethnomusicology in college, so I know the differences between the cultures, also the melodies. For example, some Irish music sounds like Japanese music. You can find those differences and similarities between the cultures, and that's very interesting to me. One piece I did with prepared piano. Like John Cage, I inserted things between the piano strings, so I got funny harmonics which ended up sounding like Balinese gamelan music. I was using the piano as percussion.

3. You've said that when you brainstorm musical ideas, you used to write them down, but now prefer using a tape recorder. Do you carry a recorder around with you all the time?

Sometimes. I get some ideas for music when I walk down the street or when I'm sleeping, so I try to note those ideas as much as I can.

4. Do you dream about music?

I get not only melodies, but some concepts when dreaming. I wrote a one-hour symphony piece ["Untitled 01"], for which the concept came to me in my dreams. When I woke up, I went down to my studio and started working on it.

5. Does the element of chance play into your music? Do you encounter interesting accidents when composing or playing?

I try to do that as much as I can, not only accidents on keyboards but accidents when I work in studios. Many accidents happen. The engineers do something wrong, or you get some noises, and I try to use those. I find accidents and unexpected noises very useful, very fresh. When I use symphony players in the studio, the first time they look at the music, they might make a mistake that sounds good, better than what I wrote. Most engineers try to erase those errors or mistakes, so I always shout, "Keep it! Keep it! Record it!" Nothing is wrong in music. Anything is possible. It's okay to know the rules, but you need to keep your ears fresh. BRYAN REESMAN

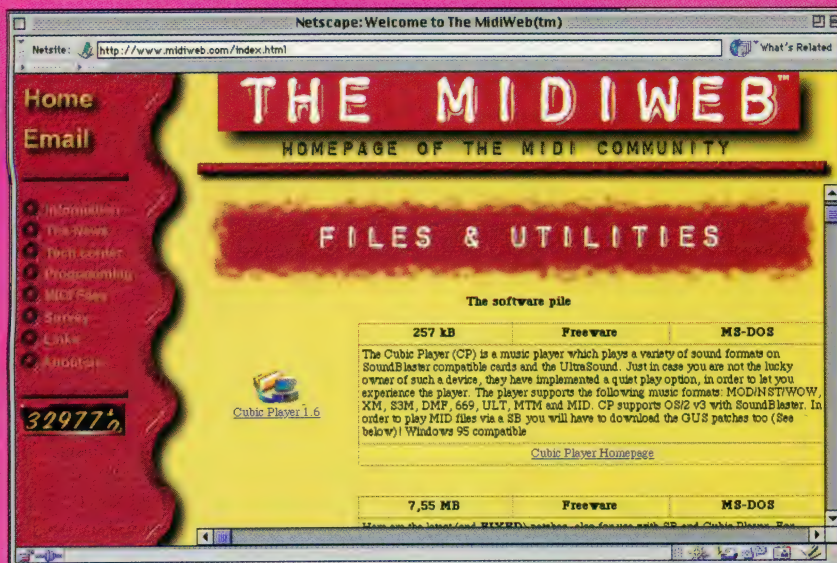
news

Gone But Not Forgotten

With the memory of Y2K and its prophesied mass chaos still lingering, we thought we'd take the time to reflect on some of the bands and artists who called it quits in '99. Veteran band **Love And Rockets'** Daniel Ash, Kevin Haskins, and David J have parted ways (for now). Given their collective career spanning more than 20 years, from Bauhaus to Tones On Tails to Love And Rockets, it's a good bet the trio will resurface on another project. . . . **KMFDM** declared itself dead, only to turn around and change its name to MDFMK. . . . **Aphex Twin** Richard James threw in the towel. He's trading his music career in to work on a long-form video project with director Chris Cunningham. . . . Farewell to the **Verve**, **Kula Shaker**, and **New Radicals** as well. [Source: Allstar News, <http://cdnow.com/allstar/>]



KMFDM's En Esch



web resources

Tips, freeware, & DIY projects

www.tipworld.com At Tip World, you can sign up to receive daily newsletters containing tips, news, and trivia on a number of topics, including computer upkeep, software and OS tricks, digital distribution of music files, and musical terms. You select the topics you're interested in, then Tip World sends you emails with embedded URLs for additional resources relating to the topic.

www.midiweb.com The MIDIWeb features a number of MIDI-related technical articles, DIY projects, free downloadable files, freeware and shareware programming utilities, links, and music technology news.

business

Show Me The Money

What to do when clients don't pay

Only the most cash-rich clients (banks and insurance companies spring to mind) pay in less than a month from receipt of your invoice. Most pay no sooner than 30 days, and a few take even longer. Advertising agencies, for example, may only pay you after their client has paid them. Once an agency gets your bill, they gather up all the other costs of the job, then send out their bill. They'll get paid in (hopefully) 30 days or so, and you'll end up getting paid 60 days from when your invoice was first sent.

Obviously, you're not in the business of financing other people's businesses. You did the work and should be paid in a timely manner. But you want to be reasonable, too. So when should you start applying pressure to a slow payer?

When a client has an outstanding invoice that's 45 days old, call and talk to your primary contact. No pressure or edginess... just a friendly reminder that the bill is growing some whiskers. Ask them to check with accounts payable to see when the invoice will be paid. If you're told, "They're cutting checks on Friday," say thanks and wait.

At 60 days, call accounts payable directly and ask them to look up the invoice. Again, there's no point in getting nasty — you're just asking when you can expect payment. The proper answer at this point is "today." If that's not their answer, politely inform them that you'll be sending a new invoice reflecting the late fee you charge all past due accounts. This fee is usually a percentage of the total invoice. (Your accountant can tell you how much the maximum allowable interest is in your state.) Beyond this point, send a new invoice every 30 days, compounding the late fee and following up by phone each month until the bill is paid.

And what if they *never* pay? If you're owed a lot, call your lawyer and go get 'em. If it's a small-claims court matter, my advice is to let it ride



and write it off on next year's taxes as a bad debt. A decision in small-claims court is difficult to enforce, and a true deadbeat will laugh it off. It will probably cost you far more in aggravation to collect than what the bill is worth.

Don't let me scare you, though. Slow-pays are uncommon, and no-pays are really rare. After years in business and hundreds of projects, I've waited as long as six months for payment, but only got truly stiffed once. Most of your clients will be honest people who have no intention of cheating you, so don't get paranoid. Just play a slow-pay like a touch-sensitive keyboard: gentle, but firm. **JIM BORDNER**

cool tools



Let's face it — trying to make music with all the latest and greatest toys that music technology has to offer can sometimes be an infuriatingly confusing process. Once you've figured out which pieces of equipment you'll need, then comes the fun part of connecting everything together — MIDI, audio, optical, word clock, SMPTE, et al. And let's not forget the learning curve that accompanies your do-all software.

Instead of spending another weekend deciphering user manuals that seem to be written in a foreign language, maybe you should check out *Cool School Interactus Desktop Audio*. This interactive CD-ROM from Cool Breeze Systems is an excellent way to get a handle on desktop audio topics. Friendly audio cues are used throughout the program to guide you through installation, setup, and navigation. Basic topics are presented and explored via the ultra-cool browser environment, which lets you link to a variety of media resources — QuickTime videos and animation, audio examples, printable text, and flow chart diagrams — for specific areas of interest. The searchable glossary includes over 1,200 MIDI and digital audio terms, and there's even a quiz function that offers predefined tests for every topic.

At \$59.95, CSi Desktop Audio is a good deal, considering the wealth of information and its interactive presentation style. Other CD-ROMs covering specific programs such as Emagic Logic Audio and Digidesign Pro Tools are also available. Contact Cool Breeze Systems at 800-729-6919 or 614-481-4000 or visit them at www.coolbreezesys.com. JOHN KROGH

departures

Charles Earland (1941-1999)

One of the great soul and jazz B-3 masters, Charles Earland, was originally a saxophonist. While touring with organist Jimmy McGriff in the mid-'60s, he got the B-3 bug and began learning to play organ on breaks. Once on his own, he switched to organ permanently. His 1969 release *Black Talk!* (Prestige/Original Jazz Classics) became a best-seller, and the popularity of his cover of "More Today Than Yesterday" earned him an undeserved reputation as a pop sellout. Examples of his classic grooves and solos abound on *Living Black* and *Leaving This Planet* (Prestige/Original Jazz Classics), and *Whip Appeal* (Muse). His most recent release was *Live* (Muse). Earland died of a heart attack December 11th after a performance in Kansas City, MO.

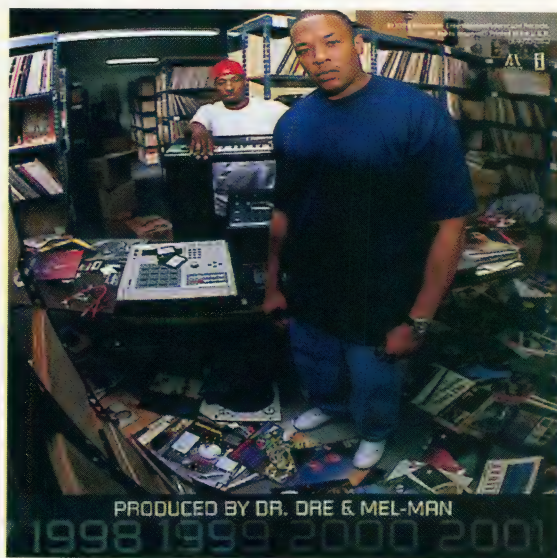


musicmakers

Dr. Dre

Back After All These Years

Since the release of his triple platinum record *The Chronic* seven years ago, hip-hop master Dr. Dre has stayed somewhat behind the scenes, producing such mega-hit records and tracks as Snoop Dogg's *Doggystyle*, the infectious "California Love" for 2Pac, and *The Slim Shady LP* featuring Midwest rapper Eminem. But after sitting back in the producer's chair for the better part of a decade making hits for other artists, Dre's back with his own sophomore solo record, fittingly titled *Dr. Dre 2001*. "I've always been just a producer at heart," Dre explains, "but my friends and family



kept insisting that I do another project. I just wasn't hearing much music that I thought was moving the world, and that's what I wanted to create."

Co-produced with sound scientist Mel-Man, Dre's new release is a collection of 22 tracks that includes collaborations with fellow hip-hop artists Snoop Dogg, Kurupt, Hittman, and King-T, to name a few. On *Dr. Dre 2001*, Dre made a clear departure from hip-hop's formulaic approach of using samples as the foundation for an entire record. "I don't think it's possible for hip-hop to grow if producers just keep copying what has already been done," Dre explains. "I use those old records simply as my motivation, but I try to stay away from sampling. There are times I might use it, but I'm not going to base a whole album around someone else's music."

Instead, Dre created the bulk of his record by actually playing instruments, a concept lost on some less adventurous hip-hop producers. "Together with my bass player and myself on the drum machine, we'd play around until something sparked me," he describes. "When I was sparked, that's when it was time to get creative and begin to orchestrate the parts."

Currently Dr. Dre is busy producing, among other things, an NWA reunion record due out later this year. Dre is also planning a tour for *Dr. Dre 2001* starting in March. No news yet as to who will be joining him on the road. JOHN KROGH



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Eddie Kramer

"In the price/performance ratings, I would give the KSM32 a solid 10. For what you were planning on spending for a single microphone you can have a pair of KSM32s."

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"The transparency and apparent depth of field is incredible. In the future the KSM32 will be an increasingly larger part of my microphone arsenal."

John Cooper

"In my 35-year recording career, I've never come across a mic that works so well on so many instruments. If you are looking for a mic that is accurate, uncolored, pristine, dead quiet and doesn't cost much, you may want to own several KSM32s. I just ordered a dozen."

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Don Was

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KEYBOARD OF THE MONTH



David Bagsby of Tulsa, Oklahoma, made it into the hallowed Keyboard of the Month spotlight with his Nano Moog. According to Bagsby, "It's the missing Dream Studio accessory for Progressive Rock Barbie, who looks just like a regular Barbie, except she wears a Rick Wakeman cape." Bagsby has high hopes for his synth, and even plans for a V2 release. "Someday I'd like to put a chip inside it [like those in greeting cards] to play the sample-and-hold segue from the middle of ELP's 'Karn Evil 9 – 1st Impression.' The sequence would be initiated by sticking a tiny dagger into the keyboard."

Do you have an unusual keyboard or rig? Send photos and details to John Krogh c/o *Keyboard*, 411 Borel Ave., Ste. 100, San Mateo, CA 94402, or email jkrogh@mfi.com.



Cocktail Cuts

There's a musical evolution of sorts going on in chill-out clubs around the world. Elements of electronica, acoustic jazz, and Latin music are melding together in what's amounting to the ultimate in electro lounge. With its Afro-Brazilian-influenced electronic beats and organic vibe, *Brasil2mil* — *The Soul of Bass-O-Nova* slides easily into this new genre. This compilation of remixes and original tracks features some influential young artists who are shaping the new sound of Brazilian music. If you can't chill out to the sultry Spanish vocals, relaxed rhythms, or trance-like synth backdrops on this disc, you're trying too hard. Our suggestion? *Brasil2mil* is best experienced in a room with low indirect lighting. And of course, not alone.

Cheers to Ziriguiboom Discos founders Béco Dranoff and Marc Hollander for producing and compiling an excellent set. (Six Degrees Records, www.sixdegreesrecords.com) JOHN KROGH



KEYBOARD

&

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Unsigned Artist of the Month

The Black Project

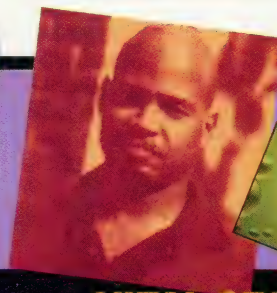
Our unsigned artist this month has a track called "Crown Me" that would fit nicely in most any urban radio station's playlist. Skillfully rapped verses bounce across funky looped guitar, bass, and drums until it all breaks down into a chorus of smooth female R&B vocals. The hook is provided by a dreamy Rhodes melody treated with a long delay.

All the music was written, performed, and produced by the Black Project's founder and core member Eugene Smith, who started the project in 1995 for the purpose of featuring different singers, MCs, and musicians over his own music.

Smith sequenced the bulk of "Crown Me" at home on an old sampling workstation, the Ensoniq EPS-16 Plus. Drum sounds were taken from the Alesis SR16, and string and bass sounds were sampled from an old Yamaha analog synth. Smith then sampled himself playing the guitar line and Rhodes line. With the bones of the track laid out, he went into a pro studio to record the singing of Amecia and the rapping of Alter Ego.

The recording for the Black Project's first CD, *The Black Project Part 1*, is more than 70 percent complete. Following the release of the album, Smith hopes to get a band together and play shows around the country. You can catch up with him and purchase the album at <http://web.wt.net/~ddsmith/blackproject.html>. Visit www.keyboardonline.com to download "Crown Me." MARKKUS ROVITO

Riffage.com showcases new music, allowing fans to share playlists of their favorite tunes. Artists can sell MP3s and CDs, post their gig schedule, maintain a photo gallery and more — all for free. Check it out at www.riffage.com.



The Black Project

VITAL STATS

Genre: Urban.

Band Members: Eugene Smith and various featured artists.

City: Houston, Texas.

Musical Influences: James Brown, Earth, Wind, and Fire, Funkadelic, John Coltrane, Miles Davis, Jimi Hendrix, Al Green, Jean-Luc Ponty, Return To Forever, Led Zeppelin, Genesis.

Background/History: Started playing guitar at age five; bass, drums, and piano at seven. Studied jazz briefly with Conrad Johnson. Learned synthesis on original Minimoog, ARP Odyssey and 2600, etc.

Production Tools: Alesis SR16, Ensoniq EPS-16 Plus, Cazio RZ-1, various analog keyboards, Sonic Foundry Sound Forge 4.5, Fender bass, Marathon Strat copy, various effects pedals, Pentium III 450MHz computer, old TASCAM mixer.

Home Page: <http://web.wt.net/~ddsmith/blackproject.html>.

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KEY INFO #185

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MacWorld Expo 2000

Highlights of a new OS

Hordes of faithful Macintosh devotees flocked to San Francisco's Moscone Center in January for MacWorld Expo 2000. Kicking off the expo in style, Apple's Steve Jobs delivered his keynote address to an attentive, well-caffeinated audience. As Jobs began, we couldn't help but wonder, "Will Apple roll out new models of computers?" Nope. Instead, the big announcement was that Mac OS X (ten) will be shipping by summer. The new OS will feature a sexy transparent interface called Aqua that "you'll want to lick," joked Jobs. Aqua is more than a facelift of previous Mac operating systems; it's a completely redesigned UI. "We wanted to give a more powerful UI to the professional users, but at the same time create a dream interface for first-timers," said Jobs.

Mac OS X will include the Dock — a customizable interface located at the bottom of the screen that serves as a repository for files, URLs, and programs. The Dock can hold up to 128 items in its tiny "tiles," which magnify automatically as you mouse over them. Other ooh-ah OS items include a built-in email utility that will open and display enclosures automatically, and a font panel that lets you preview fonts, assemble collections of favorite typefaces, and connect to the Internet for purchasing additional fonts.



Jobs also announced Apple's intention to expand their Web presence. To that end, he reported that Apple has invested \$200 million in Earthlink, and introduced a set of Internet tools aimed at enticing web users to "go Mac." With iTools, users will get free email at mac.com, 20MB of storage space on Apple's servers, free homepages, and a teacher/librarian-approved surf engine called KidSafe. You can save files

to the servers by dragging and dropping files onto the iDisk icon, which sits on your desktop. There's even a public folder capability for file sharing.

Expo attendees buzzed when Jobs demonstrated the iMacDV's movie-making capabilities. He showed an "iMovie" that was made by one of Apple's execs using a Firewire-compatible camcorder and an iMac. (The iMovie program comes bundled with iMacDVs.) Judging from the audience's reaction, we speculate that "desktop moviemaking" will make as big of a splash as

desktop publishing did when it first arrived on the scene.

For complete coverage of the MacWorld Expo, visit macworld.expo.com. And stay tuned for more *Keyboard* coverage of music-on-the-Mac hot topics. JOHN KROGH

sound design by Daniel Fisher

synth tricks

Playing realistic pitchbends

Values between zero and 127 are used to sweep between minimum and maximum control amounts for MIDI controllers such as pan and volume. These values are determined by a 7-bit binary value. But did you know that pitchbend MIDI data uses 14-bit resolution (16,384 values)?

Here's why: Your ears are very adept at detecting subtle changes in pitch and can perceive a "staircasing" effect as the pitch steps through 128 values. This effect is magnified when your pitchbend range is set to something greater than ± 2 steps. An octave pitchbend range produces clearly audible staircasing.

To smooth out pitchbending, the designers of MIDI decided that each of the 128 steps would have an additional 128 steps in between. (For more more information on this, read up on Most Significant Bit and Least Significant Bit at www.musicplayersnetwork.com.)

You don't have to worry about any of this — it's all behind the scenes. But now that you know that your pitchbend wheel is capable of 16,384 discrete steps,

you may want to rethink how much finesse you're putting into your pitchbending.

I see and hear many synth players snap their pitchbend wheel to its full amount and then let it snap back to center with no artistry involved. They might as well have a pitchbend switch with only two steps.

Imagine a guitar player bending a string as fast as possible, but then stopping perfectly when he's reached two half-steps. In real life, a fast bend would either undershoot or overshoot the perfect pitch. For a more realistic pitchbend, pretend that it gets harder to push the higher you bend a note, and be aware of what's going on in the middle of the bend.

For even more realism, try changing the pitchbend range to four half-steps. Don't worry if you sound shaky at first; this is how beginners sound on real instruments, which means you're on the right track to sounding authentic.

In time, you'll find that you can overshoot or undershoot a bend with authority, and soon a higher level of realism will be yours.



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Key Questions

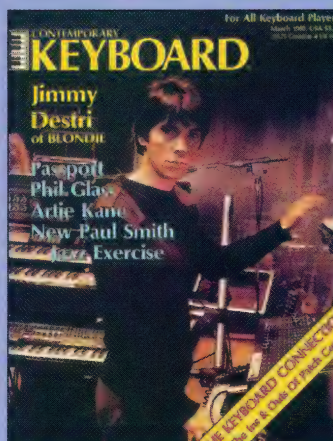
"The July '99 Basics column discussed how synths use battery power to store sounds in RAM after shutdown, and that the contents of RAM can be stored on cards that plug into the back of my synth. I have a Korg O1/W, which uses cards for adding extra sound sets — e.g. Orchestral, World, etc. As I understood your column, it implied that eventually the batteries in my cards will go dead, and I will lose those sounds. Is this so?" Mike Stevens

Mike — The data cards for O1/W series synths (as well as Wavestation and X series) were, in fact, all ROM cards. They don't use batteries, so you don't need to worry about losing the sounds that came on your cards. Korg also sold MCR03 and SRC512 RAM cards, both of which were powered by a CR2016 battery. These weren't used for the distribution of preloaded sound sets; rather, they were sold as a means to back up information for instant access or where a disk drive was not available. Batteries on these cards had an average life of about two years. The production of both ROM and RAM cards for the O1/W has been discontinued for some time. MCR03 cards remain available from Digitron Enterprises, 323-887-0777 ext. 12.

"I remember reading about a shareware vocoder for PCs, but I can't remember what issue it was. Can you direct me to the website for this program?" Jeff McCargo

Jeff — The shareware vocoder is called Cyclonix. It was featured in Craig Anderton's article "Windows Shareware Extravaganza" from the September '98 *Keyboard*. Craig profiled version 1.05; however, Cyclonix is now up to version 2 and sells for \$50. The URL listed in the article no longer works. You can get Cyclonix at www.cim.mcgill.ca/%7Ecclark/cylonix.html.

20 years ago today



Jimmy Destri of new wave super-group Blondie graced our March '80 cover. In his interview, Destri was rather candid about his feelings toward his contemporaries. "At that time, David Bowie was very intrigued by anything new wave, running around in a black leather jacket, trying to hang out with us. We were going, 'Why is this superstar trying to hang out with us?' Then we realized he was going to rip us off for our whole style and do *Heroes*. But I love him for it. He does it so much more artistically and unabashedly than Nick Lowe, who does it tackily and cheap. I don't like the way he puts his hand in things and then says, 'I was the originator' . . . it's bullshit." An ad for Roland's Jupiter-4 appeared inside the cover, touting the "affordable" price tag of \$2,895.

KEYTRACKS

Album: Leon Huff, *Here to Create Music* (Philadelphia International/The Right Stuff) **Keyboards:** Leon Huff



Leon Huff might not be a household name today, but back in the '70s he and his partner Kenny Gamble defined the "Philadelphia sound." Gamble and Huff ruled the airwaves by penning songs for such acts as the O'Jays, MFSB, Teddy Pendergrass, and others. However, neither Gamble nor Huff produced much music on their own as independent artists. Case in point: *Here to*

Create Music is Leon Huff's only solo

record. Even though it featured guest appearances by a bunch of well-known artists including Pendergrass, McFadden and Whitehead, Eddie Levert, and Stevie Wonder, it didn't fare well. Even so, it's a great showcase for Huff's considerable talent on piano and B-3.

The opening track, "Your Body Won't Move . . .," is a classic example of that Philly sound — the funk is undeniable. There are too many layers of keyboards on this track to list here, but trust me, you'll have fun picking them all out for yourself!

On the second cut, the funk gives way to a sweet shuffle groove that features Huff's acoustic piano playing, which is reminiscent of Richard Tee's gospel feel from *Stuff* (Warner Archives). [Ed. Note: Tee's *Stuff* was featured in the Feb. '99 *Key Tracks*.] Huff layers B-3 underneath his piano track, ghosting with fills throughout most of the song, until the end, when he steps out with reverberated organ flourishes.

With its repeating piano lick, tremolo Rhodes, random synth squirts, and tasty B-3 track, the album's first single, "Tight Money," is a lesson in pure Philly phunk. On "Tasty," Huff's playing on both piano and B-3 is true to the title. For the last song, "Latin Spirit," he changes things up a bit by taking his soulful piano for a drive through a Latin-funk disco. Polyester, anyone? **ROBBIE GENNET**

ALSO RECOMMENDED: Any Gamble and Huff/Philadelphia International album.

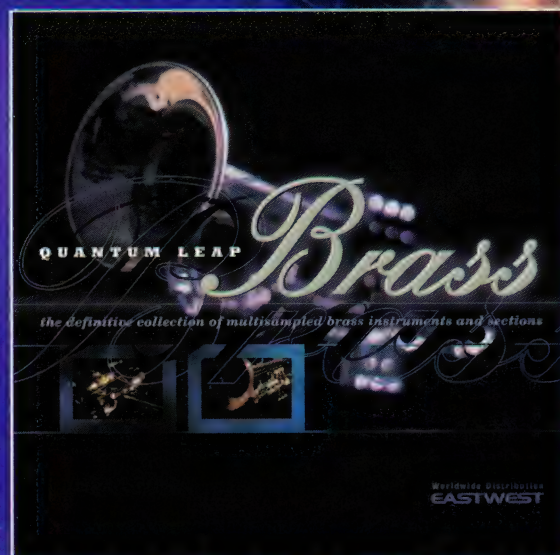
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Representing a unique variety of new RnB Hip Hop styles. A Double Action CD packed with a whole bunch of hip hop stuff from Da East Coast, 'foxtin' construction kits, sampledrum beats, for all ya people out dere who dig da flow of Missy & Busta... Die one's a killer! All of the material is also excellently suited for commercial and film music. Over 2 hours of great content including extended song arrangements.



NEW!

Ueterschall presents Raw Flava Hip Hop - basic Hip Hop cuts for da projects. You get a large collection of Drumloops, Construction Kits (the full loops and instrument sections), Single Sounds. Tempos range from 86 - 105 BPM. Programmed with da reggae machines: Enn SP12, SP1200, Akai S-950, Roland TR 808, Akai MPC 60, DMA. Raw Flava Hip Hop is globally usable for all Hip Hop/Trip Hop styles.



NEW!

Featuring acclaimed illbient pioneer DJ Spooky, and what's more, it's 8-1 and djaz, this CD delivers into such uncharted territories as Garage beats, Mad Arab electric tar riffs, looped sound FX, 100s of topped out breaks, it basses, and abrasive horn riffs. Lo-Fi and Illbient is here for those who need to create havoc. A wild collection of FXed beats, gritty grooves, battered basses and gutted guitars from ex-Sounds Good producer Bil Bryant.



NEW!

1000 Drumloops (70-120 bpm) and 300 Hip Hop & Funky sounds, 1000 hot new stereo Drumloops + 300 awesome sounds: Guitars & licks, synthesizers, hits, bass, pianos, rhodes, basses etc. All loops are sorted into bpm groups. The CD-ROM includes all of the sounds from the Audio CD. Volumes and programs have a maximum of 8 meg, filter and envelope parameters are already set, program numbers are preassigned.



NEW!

1300 Drumloops (120-140 bpm) and 300 Disco House sounds, 1300 hot new stereo Drumloops + 350 awesome sounds: Various Synthesizers, hits, basses, effects, typical house chords, organs and many more... All drumloops are sorted into bpm groups. Volumes and programs have a max. of 8 meg, filter and envelope parameters are already set, program numbers are preassigned. Groovy classic 70s Disco.



NEW!

1300 Drumloops (120-140 bpm) and 300 Electric-House Sounds, 1300 hot new stereo Drumloops + 300 awesome sounds: Various Synthesizers, hits, basses, effects, typical house chords, organs and many more... All drumloops are sorted into bpm groups. Volumes and programs have a maximum of 8 meg, filter and envelope parameters are already set, program numbers are preassigned.



NEW!

The producers of the XX-Large series have carefully chosen over 1650 drumloop samples and 1350 various sounds from their first 15 XX-Large CDs. It wasn't easy with over 15000 loops and 10000 sounds to select from. This Double CD is just a sample of what they have to offer and can be used with any type of dance music. Also available as a double 500 Mb CD-ROM set (yes, that's ONE GIGABYTE) in Akai/Enu format.



NEW!

The largest collection of BASS SOUNDS around... This compilation contains over 2200 samples, including 800 sample bass hits, 200 multitimbral basses and more than 150 quick licks. This great collection includes the most powerful bass sounds from the newest and the most wanted analog synths, as well as, FM and DX synth bass samples. There are also 100s of real, electric, acoustic, fretless, licks and slap bass samples.



Our biggest selling product, ILL JOINTZ is 2 CDs of Hip-hop and RnB loops - the cutting edge of street flow all here for your sampling pleasure! Over 2100 hours of construction kit style loops, with all loops broken down into their basic elements. All loops are at least 4 bars long so you can feel the flow, cut them up and combine them into all new combinations. Everything you need to produce a chart-topping record (ID# 1004)



Black Butta 2 features phat, head bobbing dope beats, hip hop and RnB loops, plus breakdowns of the loop components from programmer Madjet whose credits include Janet Jackson, Michael Jackson, Boy II Men, and producers Jam and Lewin. Once again Madjet has compiled a fresh variety of beats, loops, scratches, bass and lead lines, drums and fills, kicks, snares, and guitar samples in a construction kit format. (ID#1003)



Groovemasters Drums is a brilliantly recorded 2 CD collection that includes over 900 of the phat-test loops for rock, pop, funk, and disco styles featuring a HUGE VARIETY of kit sounds AND more than 650 individual drum sounds, plus a fantastic FX section with loops treated with phasers, flangers + vintage guitar amps. Solid grooves, fills and variations - an essential addition to your arsenal of drum grooves. (ID#1013)



NEW!

Visionary producer Bill Laswell (Miles Davis, Bob Marley, Sly+Robbie) stakes the dub lines with an awesome collection of dub construction kits. Massive beats, wicked bass lines and FX are in order. Tracks that filter in ambience, reggae, hip hop, jazz, dirt, grit and blood and filter out what's not. The Dub Tactic Manual contains all the ingredients you need to give your tracks a feel and groove of which there is no cure. (ID#1046)



NEW!

A brilliant presentation of Beatles style string quartets, string ensemble pads, loops and 60's style rock construction kits that are made to fit into all styles of music. String quartets are presented in construction kits that include the individual cello, viola and violin parts for total user flexibility. Also included, vintage guitars, basses and drums played by vintage people. It's the totally cool Love and Pop String Thing. (ID#1051)



Dance Mega Drums 2 includes over 4000 different Drum, Perc. and Drum machine samples, 100s of drum kits for dance music: Hip Hop Real Drums/Disco/House/Drum'n'Bass. 1332 Drum-kit samples, 473 Bass drums, 551 Snare drums, 246 Claps, Snaps and Rim-Shots, 367 Hi-hats, 70 Cymbals, 300 Perc. and FX, 12 ultra rare drum machines. All samples are sorted and categorized. CD 2 is an Akai/Enu CD-ROM. (ID#1012)



This is the ultimate in house collection! 3 CDs full of the toughest house grooves, loops, basses, synths, vocals and FX. Lots of samples all BPM matched and organized into bpm groups in the house music world. If house is your passion, you'll never need another package! Total package! FIVE STAR ***** REVIEW: "Zero-G have come up with as close to the definitive revelation for the house producer as could be imagined". (ID#1017)



NEW!

A new series for Latin producers, Festa Latina Vol.1 is a 2-CD set (Audio/WAV) that features Drums & Rhythms, Authentic Latin and percussion grooves from Latin America + a Latin (Soul machine, rumba, guajira, joropo, meringue, bolero), salsa (son, reggaeton, bolero, mambo, merengue, cumbia, rumba, bolero, tango, flamenco, etc.) and more. The grooves are as real as the instruments from Vol. 2 and 3. (ID#1052)



The loops on CHEMICAL BEATS have masses of attack, huge drum sounds, and FX (trashed through advanced signal processors and precision loops, transducers, filters, auto loops, cutting edge synth & guitar FX, plus a vast collection of drum & cymbal hits). 350 combinations are possible. One of the most flexible and awesome drum loop collections available and a winner of Rhythms' posthumous KB1007 award. (ID#1002)



NEW!

Volume 2 of the very popular drumloop collection with over 1500 hot new stereo Add-On PERCUSION and RHYTHM EFFECT loops without heavy drums and low frequencies. These loops are the "Groove-makers" for every modern dance production. Additionally, XX-Large "No Kick 2" includes a hip hop collection of really kickin' bass drums. All loops are perfectly suited to beats per minute and arranged in groups from 75-140 bpm.

PURE INSPIRATION

CALL 1-800-833-8339

★ OVERNIGHT SHIPPING ★ OVER 600 PRODUCTS IN STOCK!



If you're looking for some really different sounds, why not look to the dark ages? We're not talking about analog synths; with **EARLY PATCHES** you can have the sounds of medieval and renaissance Europe. This collection comprises 48 wind, stringed, and percussion instruments, including such rarities as shawm, poulter, Balaban long-pipe, Turkish drums, as well as the more familiar recorder, lute, glockenspiel, and kettle drum.



"With so much soundware available to the discriminating producer, it's getting harder for any one CD package to stand out, which is why we gave it our **KEY BUY** award. Both the sheer amount of material and the freshness of the performance mark it as a must-have for composers of 'world music.'" (KEYBOARD) Need we say more? 7 CD & 4-CD/CD-ROM Set (ID#1045)



Using pipes, reeds, accordions & more, pieces of rubber, water-drum egg, whistle or his low horns Peter Siedlaczek has gotten sounds out of a Grand Piano that can be found nowhere else! Many playable effects, atmospheres and percussive sounds are included (e.g. thumb tack piano). Of course, traditional pianos are also provided. 2 CD-ROM set \$199.95. Available for Akai S1000/SS-6000, Emu EOS and Giga. (ID#1038)



The long awaited sequel to Killer Horns 1. Now experience the sound and feel of standing in front of some of the best horn players in the world, playing riffs, stabs, chords, falls, harmonies and cues. Killer Horns 2 includes sections of tenor sax, baritone, soprano, flugelhorn and trumpet in various combinations. Unlike Killer Horns 1 this volume provides you with links as different keys and tempo for maximum flexibility. (ID#1043)

#1 SELLING ORCHESTRAL LIBRARY

THE INDUSTRY STANDARD

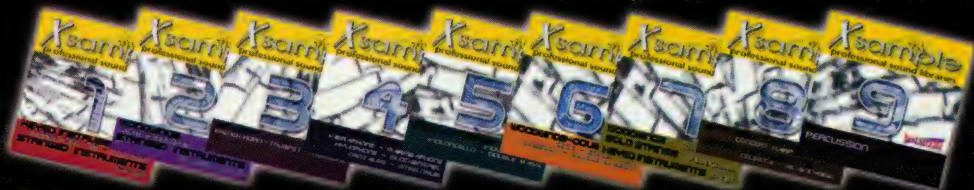


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- 6 Oboe, English Horn, Bassoon, Contra Bassoon. 7 Oboe D'amore, Violoncello, Spinnet/ Klavichord, Kalimba.
- 8 Celesta, Klavicymbel, Concert Harp, Psalter. 9 Special Instruments, Percussion

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Madison Console, Grand, & Concert Grand 88s

Digital pianos

Three new Madison digital pianos have been introduced by Music Industries. Each of the three provides an 88-note keyboard, programmable split point and layering, a self-contained stereo speaker system, audio in and out jacks, and two headphone jacks. The **CSL-88 Console 88 (\$1,095)** features a "piano feel" keyboard, ten piano and background voices, and separate volume controls for the main and background voices. With the **GND-88 Grand 88 (\$1,495)**, you get a hammer-action keyboard, 14 piano and background voices, separate main and background volume controls, digital reverb and chorus, and adjustable dynamic response. The **CGD-88 Concert Grand 88 (\$1,695)** includes a hammer-action keyboard; 19 piano and background voices; left-hand bass; a sequencer; separate left, right, bass, and master volume controls; digital reverb and chorus; and three dynamic ranges. Optionally available are the **DS-1 Designer Base (\$149.95)**, which gives any Madison model the appearance of a spinet piano; the **CS-1 Contemporary Base (\$99.95)**, consisting of two end panels in a matching finish and a crossbar support; the **PB-110 black metal padded bench (\$99.95)**; the **PB-120 black metal padded bench with storage compartment (\$129.95)**; and the **0-20/BM matte black padded adjustable-height wooden bench (\$179.95)**.

Music Industries, 516-352-4110, www.musicindustries.com. **KEY INFO #133**



Red Sound Darkstar

Polyphonic synth module

The **Darkstar (\$399)** from Red Sound uses DSP analog modeling to generate eight voices of polyphony with two oscillators per voice. It's five-part multitimbral and allows joystick mixing of its oscillators, ring modulation, and noise generators. Housed in a desktop-style case, the Darkstar features two external inputs and MIDI. A rackmount kit is available.

Red Sound Systems, +44 (0) 1628-819191, red@redsound.com, www.redsound.com.

KEY INFO #134



M Audio Delta 44

PCI digital recording interface (Win)

M Audio's **Delta 44** PCI digital recording interface (**\$399.95**) delivers four balanced/unbalanced I/O channels of up to 24-bit/96kHz audio configurable for +4dB or -10dB signal levels. The 1/4" TRS connectors on its breakout box interface with the PCI card's converters. Also included are the Delta Control Panel software, for comprehensive routing, monitoring, and mixing capabilities, and drivers for Windows 95/98, PC ASIO/ASIO2, and DirectX. Mac drivers are under development.

M Audio/Midiman, 626-445-2842, info@m-audio.com, www.m-audio.com.

KEY INFO #135

NEED MORE PRODUCT INFO? NEED IT FAST?

Visit www.keyboardonline.com and click on the KEY INFO button to request literature on products featured in New Gear and elsewhere in Keyboard.



Antares Mic Modeler

TDM/MAS/VST/RTAS/DirectX plug-in

The Antares **Microphone Modeler** plug-in (\$599 for TDM version, \$399 each for MAS, VST, or RTAS version, \$299 for DirectX version) reportedly allows any reasonably full-range microphone to sound like virtually any other mic. Using patented Spectral Shaping Tool technology, Antares engineers have created digital models of a wide variety of mics, from historical classics to modern exotics, as well as a selection of industry-standard workhorses. The Modeler allows control of each mic's specific options, such as switchable lowpass filtering. Other aspects such as wind screens and tube saturation are also modeled.

Antares, 888-332-2636 or 408-399-0008, www.antarestech.com.

KEY INFO #136

Musitek SmartScore

Music scanning software (Mac & Win)

SmartScore for Macintosh PowerPC and Windows 95 (\$399; academic pricing available for schools and churches) is Musitek's flagship music-scanning software. It's a fully integrated music-scanning, music-scoring, and MIDI-sequencing application that's reportedly capable of recognizing almost every musical element on the page and instantly playing back with dynamics, articulations, repeats, and other nuances. According to the manufacturer, scores can be transposed, parts

separated, and printed out within minutes of scanning. The user can create scores from scratch using one of 12 templates, and the resulting MIDI file can be edited in Piano Roll, Overview, and Event List formats. In addition, Standard MIDI Files can be imported and formatted into engraver-quality notation for printing, transposition, and reformatting.

Musitek, 805-646-8051, www.musitek.com. KEY INFO #137

KEY NEWS

Emagic has announced that **Logic Audio 4.1.2** for Mac (free upgrade from version 4.0; www.emagic.de) provides Direct I/O and MIDI support for Digidesign's Digi 001. . . . Focusrite Audio Engineering of the U.K. has appointed Digidesign (www.digidesign.com) as their exclusive U.S. distributor. . . . Digidesign and Lexicon

have announced a joint agreement enabling Digidesign to distribute the **LexiVerb** plug-in (\$795; www.digidesign.com) for the Pro Tools 24 Mix platform. . . . Steinberg has announced it has ceased development of Cubase Audio TDM for Digidesign hardware in order to concentrate on their core activity, native audio processing on the Mac and Windows platforms (www.us.steinberg.net). . . . Yorkville Sound has

acquired Applied Research & Technology (ART; www.artroch.com). Product support, manufacturing, and development will reportedly continue. . . . Version 1.1 of McDSP's **FilterBank** and **CompressorBank** plug-ins (\$495 each for TDM and AudioSuite version, \$195 each for AudioSuite-only version, free upgrades; www.mcdsp.com) support Digidesign's Real-Time AudioSuite (RTAS) plug-in format.

Digitech Vocalist VR

Multi-part harmony processor

Digitech's **Vocalist VR** (\$399.95) enables a singer to add up to four harmony vocals to his or her voice. Its processor allows users to choose between chordal and scalar harmonies, select the key and scale, determine whether the harmonies are below or above their voice, assign individual mix levels for their voice and the harmonies, and add reverb to the input voice or all harmonies using any of nine reverb types. Six lighted Voicing buttons on the VR's front panel visually indicate whether harmonies are above, below, or in unison with

the input voice. A press of any Voicing button adds or removes that particular harmony. A programmable MIDI split point allows singers to select the range of notes that the VR responds to, so the VR can follow a bass line or right-hand chords. The 1U rackmount VR provides a balanced, low-impedance XLR mic input, an unbalanced 1/4" line-level input, a 1/4" auxiliary input for direct feed to the reverb, and separate left/mono and right 1/4" outputs with switchable -10/+4dB output levels.

Digitech, 801-566-8800, www.digitech.com. KEY INFO #138

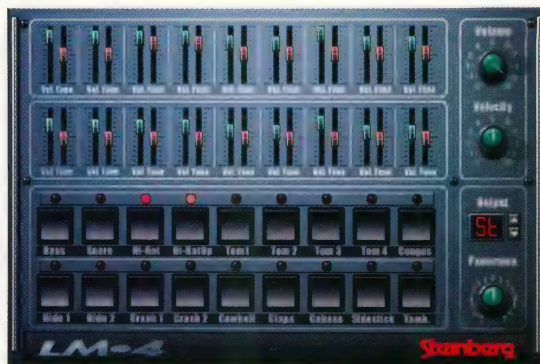


Steinberg LM-4

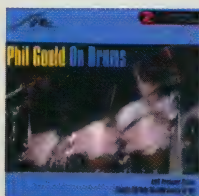
Drum machine module for VST 2.0

Steinberg's **LM-4 Drum Module (\$99)** works as a plug-in for VST 2.0-compatible systems. It's able to handle WAV or AIFF audio files of up to 24-bit/96kHz, can be played via MIDI, and offers a stereo mix and four individual monophonic outputs for additional EQ and effects processing. Twenty drum sets are included, with 18 sounds per set, and users can create their own custom sets.

Steinberg North America, 818-678-5100, info@steinbergna.com, www.us.steinberg.net. KEY INFO #139



soundbytes



AMG's **Phil Gould on Drums (\$99.95)** is a dual-disc package containing an audio CD and a mixed-mode WAV/AIFF CD-ROM of hundreds of grooves and classic loops recorded by former Level 42 drummer Phil Gould over the past 15 years. Some loops include percussion tracks played by Miles Bould and Rupert Brown. A massive range of styles is covered,

including drum 'n' bass, and tempos range from 70 to 165 bpm.

AMG, www.amguk.co.uk; U.S. dist. by Big Fish Audio, 800-717-3474 or 818-768-6115, info@bigfishaudio.com, www.bigfishaudio.com. KEY INFO #140

Mzone's **GrooveMasters Drums (\$99.95 audio CD, \$199.95 for Akai S1000 CD-ROM)** provides over 900 drum loops in rock, pop, funk, and disco styles played on different kits. Each loop comes in several variations: with and without kick, with cymbals, hi-hat only, etc. In addition, there are more than 650 single hits, with complete samples of three entire drum kits and cymbals. Also onboard is a section of loops processed using phasers, flangers, and vintage guitar amps.



GrooveMasters Bass (\$99.95) from Mzone features bass grooves and multi-samples played on ten different bass guitars by Denmark's Jon Bruland. The two-audio-CD set includes a large selection of fixed-tempo loops played to the grooves from GrooveMasters Drums so that they work seamlessly together. In addition, there's a selection of free-tempo loops. All loops are recorded in two or four keys and include a variety of sounds and playing styles, including fingered, thumb, acoustic, and Bruland's own "Babla" style, which reportedly sounds like tabla played on a bass. You also get multisamples of all the basses used, most at two or three velocity levels, as well as special effects such as neck glides.

DanceZone Electronica (\$99.95) is a triple-disc set that includes two audio CDs and a mixed-mode WAV/Akai S5000/6000 CD-ROM containing fresh loops of synth bass lines, drums, beat boxes, percussion, synth percussion, chords, pads, sweeps, and vocoder-processed sounds. The creators of DanceZone Electronica were inspired by classic synth masters such as Jean-Michel Jarre, Kraftwerk, and Depeche Mode, together with up-to-date pumping techno beats and grooves. All the loops are compatible and interlock in both tempo and pitch, and each loop is represented in six different keys.

Mzone ApS, +45-70202540, mailto:info@mzone.dk, www.mzone.dk.

KEY INFO #141

Among the instruments represented in the **Acoustic Bass Library (\$299)** for the NemeSys GigaSampler is a 180-year-old hand-crafted contrabass. Also available for GigaSampler is **GigaHarp (\$299)**, a library of 300 stereo samples that includes every string of a Salvi pedal harp sampled at four velocities, with dual-harmonic, hand-damped, and muffled variations. Each pluck was recorded using Neumann KM-84 mics, onboard RMC pickups, and Neve mic preamps.

Nemesys Technology, 512-219-9181, www.nemesysmusic.com.

KEY INFO #142

Musicians from Russia and the Boston Pops Orchestra were assembled for the production of the Classical Implants collections of SoundFont and DirectX formats from Sonic Implants. SoundFonts are compatible with soundcards from manufacturers including Creative Labs, E-mu, Voyetra Turtle Beach, and TerraTec, as well as software synths from developers such as Seer Systems and BitHeadz. **Solo and Ensemble Strings (\$24.95)** was recorded using selected Russian microphones and Focusrite preamps, and includes marcato, legato, and pizzicato violins, violas, cellos, and basses. Members of the Boston Pops played piccolo, flute, oboe, English horn, clarinet, and bassoon for **Woodwinds (\$19.95)**, as well as trumpet, trombone, and French horn for **Orchestral Brass (\$14.95)**.

Within the Drum Implants SoundFont library are eight titles. **Session Drums (\$19.95)** features over 12MB of multi-velocity drum kit samples laid out in GM keymaps. **Session Drums 2 (\$19.95)** has additional drums and cymbals from the original Session Drums recording sessions. **Session Cymbals (\$14.95)** offers 12MB of multi-velocity stereo crashes and rides. **Session Drums Kicks and Snares (\$14.95)** includes eight multi-velocity stereo samples in each category. For **Fuz909 Groovebox (\$14.95)**, a Roland TR-909 was pumped through a tube preamp into an Orban parabolic EQ "driven to the point of melt-down," according to the manufacturer. **Brush Drumkits (\$19.95)** contains lots of snare hits, swirls, taps, and strokes, as well as brushed toms and cymbals. Source sounds in **Processed Kicks and Snares (\$9.95)** were heavily tweaked and run through delays, gates, and compressors. In the Stomp/Blue Man Group vein, **Noise Pollution — True Environment Recording (\$18.95)** is packed with 8MB of alternative percussion samples such as shovels, sledgehammers, trash cans, ladders, buckets, and pipes. Sonic Implants can be downloaded via the Internet, and custom-burned CD-ROMs are also available.

Sonic Implants Network, 781-641-0063, studio@sonicimplants.com, www.hruskaudio.com. KEY INFO #143

Frontier Designs WaveCenter/PCI

PCI soundcard (Mac or Win)

WaveCenter/PCI (\$389) from Frontier Designs integrates multichannel digital audio in the form of ADAT lightpipe and S/PDIF inputs and outputs with MIDI I/O on a single PCI card for those who want a digital mixer for their Windows or Mac-based recording studio. WaveCenter/PCI lets you connect ten digital audio channels in each direction while providing MIDI I/O for automation and sequencing. It includes an ASIO 2.0 driver and a direct GigaSampler Interface driver, and supports input monitoring, digital audio format conversions, 16- to 24-bit resolution, and sample rates of 44.1 and 48kHz. It can dynamically resample 8, 11.025, 16, 22.05, and 32kHz digital audio for playback through external converters.

Frontier Design Group, 800-928-3236 or 603-448-6283, info@frontierdesign.com, www.frontierdesign.com. KEY INFO #144

Now Shipping

As of January 6, 2000, these products were shipping:

- Kind of Loud Technologies RealVerb 5.1, Tweetie, and Woofie TDM plug-ins (\$1,495, \$495, and \$495, respectively; www.kindofloud.com)
- Korg D16 digital recording studio and SP-100 digital piano (\$2,399 and \$1,299, respectively; www.korg.com)
- Coda Finale PrintMusic 2000 entry-level notation software for Mac and Windows (\$69.95; www.codamusic.com)
- Steinberg is distributing Native Instruments Pro-Five software synth for Mac and Windows (\$199; www.us.steinberg.net)
- U & I Software MetaSynth 2.6 for Power Mac (\$299; www.uissoftware.com)
- ESI, the Emagic Synthesizer One for Logic Audio (\$99; www.emagic.de)
- Digi-design Pro Tools v5.0 for Mac and Win NT, which includes support for Macintosh G4 systems and Mac OS 9 (core systems: \$5,995 for Pro Tools|24, \$7,995 for Pro Tools|24 Mix; \$9,995 for Pro Tools|24 MixPlus; audio interfaces purchased separately; contact Digidesign for upgrade prices); DirectConnect (free with Pro Tools v5.0), a host-based synthesizer streaming tool that supports up to 32 discrete input channels; and the Pro Tools Expansion Chassis, a rackmountable PCI expansion system that allows users to add up to ten supported Digidesign PCI cards (\$1,995; www.digidesign.com)
- Cycling '74 Pluggo 2.0 plug-in software, which supports VST 2.0 and MAS environments (\$74; www.cycling74.com)
- Frontier Designs WaveCenter/PCI PCI soundcard (\$389; www.frontierdesign.com).

Electro-Harmonix Small Clone

Chorus pedal

The Electro-Harmonix Small Clone (\$106) is a reissue of the analog chorus pedal used by the late Kurt Cobain. A depth switch and one rate knob make for easy operation. With simple tweaking the Small Clone can generate doubling effects, chiming 12-string-style sounds, or Leslie-like warbles. It operates on a single nine-volt battery or AC adapter, and comes in an attractive wood box.

Electro-Harmonix, 212-529-0466, info@ehx.com, www.ehx.com.

KEY INFO #145



dbx 386 Dual-channel tube mic preamp

The 1U rackmount dbx 386 Silver Series dual-channel tube mic preamp (\$569.95) combines the warmth of vacuum tubes with dbx's proprietary Type IV conversion system. It provides phantom power, phase-invert switches, 75Hz low-cut filters, and digital outputs in both AES/EBU and S/PDIF formats. Available sampling rates are 44.1, 48, 88.2, and 96kHz, and the digital outputs can communicate in 16-, 20-, or 24-bit word lengths. In addition, Type IV conversion offers the ability to select noise

shape algorithms and dither types. Other features include rear-panel mic and line inputs and outputs, a high-impedance 1/4" instrument input on the front panel, a mic/line switch, a 20dB pad, independent controls for the analog and digital outputs, 12-segment LED meters, word-clock sync input and output, and two hand-selected and matched 12AU7 tubes.

dbx Professional, 801-568-7660; customer@dbxpro.com, www.dbxpro.com. KEY INFO #146



**NEW!****1202-VLZ PRO**

12x2x1 • 4 XDR[™] preamps • 4 mono & 4 stereo chs.
 • 3-band EQ @ 12kHz, 2.5kHz & 80Hz • 18dB/oct. @ 75Hz low cut filter • 2 aux sends per ch. • Constant Loudness pan controls
 • 2 aux returns • RCA tape inputs & outputs • 4 channel inserts
 • XLR & TRS balanced outputs • switchable +4/mic level output
 • ALT 3-4 stereo bus • Control Room matrix with Assign to Main Mix & separate outputs • Ctl Rm/Phone level control • 12-LED metering plus RUDE Solo light • Aux 1 Pre/Post • EFX to Monitor
 • sealed rotary controls • built-in power supply • steel chassis

**NEW!****1402-VLZ PRO**

14x2x1 • 6 XDR[™] preamps • 60mm faders • 6 mono & 4 stereo chs. • 3-band EQ @ 12kHz, 2.5kHz & 80Hz • 18dB/oct. @ 75Hz low cut • 2 aux sends per ch. • Constant Loudness pan controls • 2 aux returns • RCA tape inputs & outputs • 6 channel inserts • XLR & TRS balanced outputs • switchable +4/mic level output • ALT 3-4 stereo bus • Switchable AFL/PFL Solo • Control Room matrix with Assign to Main Mix & separate outputs • Ctl Rm/Phone level control • 12-LED metering plus Level Set LED & RUDE Solo light • Aux 1 Pre/Post • EFX to Monitor • sealed rotary controls • built-in power supply • steel chassis

**NEW!****1604-VLZ PRO**

16x4x2 • 16 XDR[™] preamps • 60mm faders • 16 mono chs.
 • 4 sub buses • main L/R • 3-band EQ with sweepable midrange (12kHz & 80Hz shelving, 100Hz-8kHz mid) • 18dB/oct. @ 75Hz low cut • 6 aux sends per ch. • Constant Loudness pan controls • 4 aux returns • RCA tape inputs & outputs • 16 channel inserts • 8 direct outs • TRS balanced outputs • Switchable AFL/PFL Solo • Control Room matrix with Assign to Main Mix & separate outputs • Ctl Rm/Phone level control • 12-LED metering plus Level Set LED & RUDE Solo light • Aux 1 & 2 Pre/Post • Aux Send master section w/level controls • Solo buttons with LEDs • Stereo Aux Return assign section with EFX to Monitor & Main/Submix assign • built-in power supply • steel chassis • BNC lamp socket • Rotatable I/O pod allows 5 physical configurations



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BANDWIDTH



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SAMPLING RATE INPUTS
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& E.I.N. AT NORMAL
OPERATING LEVELS
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MIXER AVAILABLE

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The first in-mixer preamps that can effortlessly amplify the most subtle of sonic nuances, creating an aural panorama that's breathtakingly realistic, excitingly vivid and

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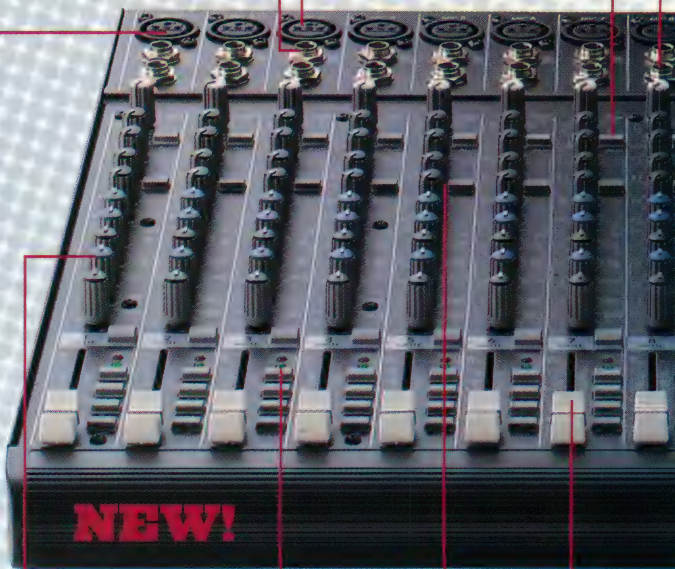
Introducing the 1642-VLZ PRO...
4 submix buses, 4 aux sends per

10 XDR[™] mic preamplifiers with the finest sound quality (and specifications) ever on a mixer of any size. 0dB to 60dB gain range.

10 mono mic inputs (Chs. 1-10) and **8 mono line inputs** (Chs. 1-8), with +15dB to -45dB gain range.

Inserts on the first eight 1642-VLZ[™] PRO channels.

75Hz low cut filters on all 10 mic channels. Sharp 18dB/oct., phase accurate circuitry cuts infrasonics caused by room and stage rumble, wind noise, mic clunks, P-pops & other crud.

**NEW!**

Sweepable midrange EQ on Chs. 1-8. Incredibly wide 100Hz-8kHz sweep range lets you use this control as a second HF or LF control, too! Fixed shelving HF EQ at 12kHz. Shelving LF at 80Hz.

Overload and ultra-sensitive, hyper-twitchy -20dB **Signal Present LEDs** on every channel.

4 aux sends per channel. 15dB of gain above Unity to drive wimpy effects processors. Auxes 1 & 2 are pre/post switchable; Auxes 3&4 are fixed post-fader.

60mm logarithmic taper faders with ultra-long-life resistance elements provide linear volume change from full-on to ∞.

truly 3-dimensional in scope. The first built-in mic preamps that are impedance independent and designed with full protection from hot-patching and dead shorts. The first compact mixer with mic preamps that really do sound like \$500 to \$2000-per-channel esoteric preamps.

It took us two years and a quarter of a million dollars. And you probably won't believe it until you actually audition the XDR[™] circuitry with a high qual-

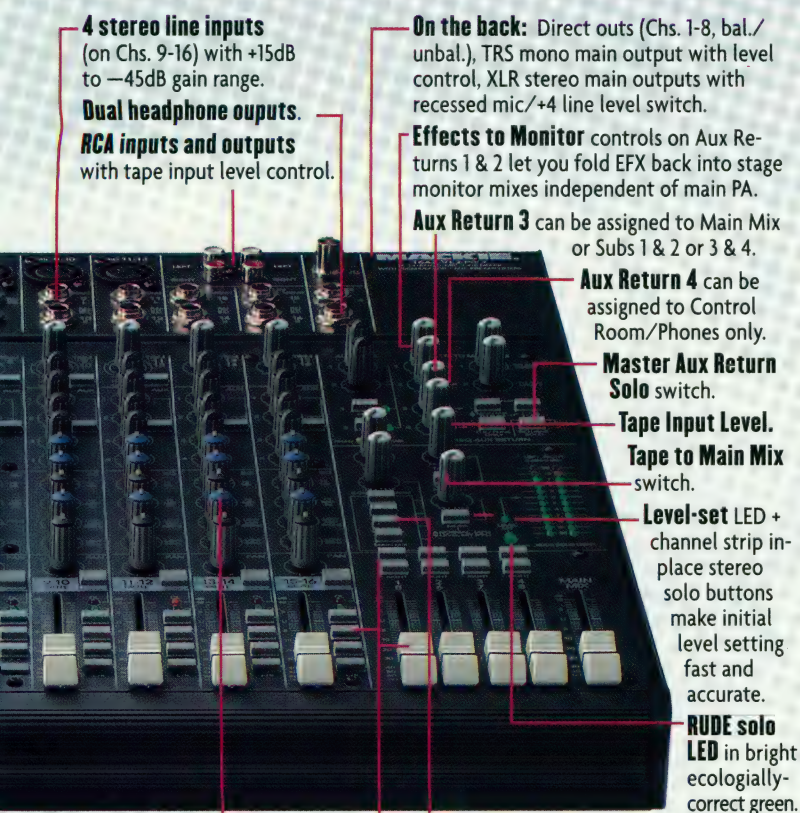
ity condenser mic. But it's true: Verifiable with your ears. Verifiable on the lab bench.

XDR's Controlled Interface Input Impedance system accepts an enormous range of impedances without compromising frequency response. Whether the mic/cable load is 50 ohms, 150 ohms or 600 ohms, XDR[™] mic preamp frequency response is down less than one tenth of a dB at 20Hz and 20kHz!

Many mixers that tout low E.I.N. specs can't deliver that

LUXURY VLZ PRO MIXER!

10 XDR mic preamp channels and 4 stereo line channels, channel, sweepable mid EQ and more for just \$999*



4 stereo line inputs (on Chs. 9-16) with +15dB to -45dB gain range.

Dual headphone outputs.
RCA inputs and outputs with tape input level control.

On the back: Direct outs (Chs. 1-8, bal./ unbal.), TRS mono main output with level control, XLR stereo main outputs with recessed mic/+4 line level switch.

Effects to Monitor controls on Aux Returns 1 & 2 let you fold EFX back into stage monitor mixes independent of main PA.

Aux Return 3 can be assigned to Main Mix or Subs 1 & 2 or 3 & 4.

Aux Return 4 can be assigned to Control Room/Phones only.

Master Aux Return Solo switch.

Tape Input Level.

Tape to Main Mix switch.

Level-set LED + channel strip in-place stereo solo buttons make initial level setting fast and accurate.

RUDE solo LED in bright ecologically-correct green.

4-band EQ on Chs. 9-16. With 12kHz HF, 3K Hi-Mid, 800Hz Low-Mid and 80HZ LF.

True 4-bus configuration with bus assigns on every channel and master LR assign switches. Bus outputs are duplicated (**double-bussed**) so you can hook up all 8 channels of a digital recorder without constant re-patching.

Control Room/Phones Section with separate headphone and control room level controls. Source Matrix selects any combination of Main Mix, Subs 1 & 2, Subs 3 & 4 or Tape. In studio applications, the matrix gives you exceptional monitoring flexibility. During live mixing, it lets you create a third stage monitor mix or separate feed.

* \$999 suggested U.S. retail price does not include extra toppings or optional thick Sicilian crust. Your price may vary. No user-serviceable parts in this footnote.

performance at normal +20 to +30dB gain settings. Our XDR™ design maintains lower noise levels in this "real world" operating range than even mega-expensive outboard designs.

The more sensitive a preamp is, the more likely it is to also pick up radio frequency interference (RFI). XDR™ incorporates bifilar wound DC pulse transformers with high permeability cores that reject RFI without cutting audible high

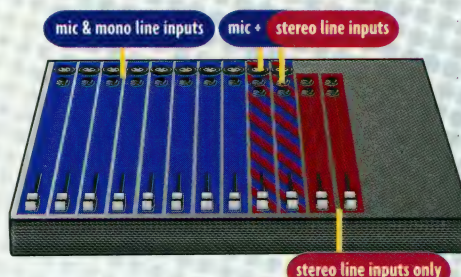
frequency response. Plus we direct-coupled the circuit from input to output and used pole-zero-cancellation constant current biasing. Bottom line for the non-technical: Our VLZ™ PRO Series has the best RFI rejection of any mixing consoles in the world. Period.

Hearing is believing. Visit a Mackie Dealer and audition XDR™ mic preamps with a really high quality condenser mic. Then get a 1642-VLZ™ PRO. Think of it as ten expensive esoteric stereo mic preamps... with a really excellent compact mixer attached.

Lots of keyboards? On-stage DJ? Electronic drums? The 1642-VLZ PRO has the inputs and features you need.

You asked. We listened. Scads of stereo line level inputs plus ten of the finest mic preamps ever offered on a compact mixer.

The 1642-VLZ™ PRO is packed with features that make live mixing easier and more creative: EFX To Monitor for folding effects back into two separate monitor mixes, dual pre-fader



aux sends on every channel, sweepable midrange EQ, 75Hz low cut filters to cut stage rumble and wind noise, Control Room/Phones switching matrix that can be used to create a third monitor mix, Tape to Main Mix switch for music during breaks, mono output with level control and XLR stereo outputs with recessed mic/line level switch.

And unlike any other mixer with this kind of live mixing chops, the 1642-VLZ™ PRO is also a superb studio recording console (just like its bigger brother, the legendary 1604-VLZ™ PRO.) The 1642-VLZ™ PRO is configured to make recording incredibly easy with two dedicated channels for tracking, eight for monitoring and two stereo channels for effects. Plus "double-bussed" submix outputs so you can feed all 8 channels of your recorder without having to re-patch.

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Play Better Now!

L

earning how to play the keyboard is a lifelong activity. Whether you're a pianist, an organist, a synth player, or all three, and no matter how good you are, there's no such thing as having a perfect technical command of the black-and-whites. The challenge, every day, is to learn whatever you need to learn next in order to take your music to the next level.

The resources you need to move forward can be elusive, however. If you're not in contact with experienced musicians or studying regularly with a teacher, the path to pianistic perfection can be obscured, indeed. Even if you buy exercise books and practice them faithfully, you may find that something essential is still missing.

The five articles in this month's special **Play Better Now!** section provide some important ingredients that are missing from the typical piano study curriculum. Each represents a separate facet of keyboard study. Maybe only one of them will speak to your needs, or maybe you'll find something on every page that will help you improve your playing. Kenny Werner's "Mastery Class" explains his personal and highly effective approach to what might be called the inner game of music. L.A. session ace Terry Trotter will help you build a solid foundation of keyboard technique. Fred Hersch and Marian McPartland share their insights on how to plan your own progress as a keyboard player. Jim Aikin presents the much-requested second installment of his "Chord Workshop." Finally, we have an annotated guide to new and inspiring materials for keyboard self-study.

The most important thing you can do to improve your playing is spend some time in the woodshed, as jazz players used to say. The articles in **Play Better Now!** are full of ideas that will help you make the most of that time, enjoy it more, and deepen your passion for music.

ERNE RIDEOUT

Mastery Class

*Master your ego, master your materials, and
your inner music will flow*

by Kenny Werner

Many musicians try to improvise, yet it seems very few really master it. This leads some people to accept the old adage, "Some of us have talent and some of us don't." When someone learns a less romantic skill such as, say, auto care, they don't demand of themselves that they be "talented." Familiarity with the nuts and bolts, so to speak, follows as they continue to probe and prod under the hood. (If you were expecting some technical car jargon here, forget it!) If we think music is any different, maybe it's because music casts some kind of spell that makes us stupider than we would be otherwise.

The good news is that if we make time for thorough, conscious practicing, the results will come. Anyone with a reasonably functioning brain will become familiar with something if they visit it every day. The trick is to prevent the conscious mind from sabotaging our efforts. If our minds don't sabotage us, we'll be able to hang in there and achieve total command.

Over the years, I've had the privilege of guiding many musicians through their thorny mental processes. The things we do to sabotage ourselves are so common that I chalk them up to human nature — we exaggerate our weaknesses, our strengths, and how much or how little we know, and we distort who we are and where we are in our journey, whether it be our musical journey or our life journey.

We've all felt the results of self-sabotage in our playing. Think about a time when you really needed to play well, when your self-esteem was on the line. Maybe someone walked into the room whom you really respected. How did you play? Most people tell me that they played terribly, or at least not at their best. Self-sabotage causes us to move on from a subject before it is mastered, to go through the motions instead of really practicing, so the material we've practiced comes out strained and awkward in performance, or doesn't come at all. And then when we try harder, we play worse. Sound familiar?

TAKE A PEAK

In contrast, think of a time when there were absolutely no consequences to your performance. Maybe you were playing with friends whom you loved and trusted, or perhaps you were playing a wedding and no one was listening. How did you play then? Most musicians tell me that



at those times it really flowed — they weren't sabotaging themselves. During those blessed moments, the music seems to be happening by itself. You're grooving the way you've always wanted to, yet it feels as if you're just observing, as if the music were happening to you. Just as when you sit on a river bank and watch the water go by, you feel no responsibility in any way for it, yet you're sure that it will continue to flow forever.

For many musicians, those peak experiences in performance happen once or twice in a lifetime, and when they do, they're never forgotten. So profound are those moments that we sometimes spend the rest of our lives looking for them again, believing them to represent the way we really play, certain that all these other gigs are just some horrible misunderstanding. Am I hitting any targets here?

Check it out: The way we play during those brilliant moments is the way we really play. When the clouds fill the sky and everything seems gray, do we ever doubt that a brilliant sun lies behind those clouds? We regard the clouds as temporary, and we're quite sure that it's the sun that's eternal. The clouds are like our tendency for self-sabotage; our own brilliance is always there behind it.

THE PRIME SABOTEUR

Of all the ways the conscious mind has of sabotaging our creativity, the ego is the worst. It's so effective, I call it the Weaver of Delusion. It guards the door to our inner creativity, tenaciously filtering and blocking any natural, unprocessed ideas. It fills us with desire for the A-1 certified hipness, the cool sounds, the clever lines. It debilitates us with fear. When we're practicing, it chides, "Come on! You've got to hurry! You've got to improve by *yesterday*!" This unreasonable pressure destroys the natural progression of growth in music, and causes us to skim the surface rather than dig in.

Unfortunately, while the ego does this, the music that wants to manifest itself through us is blocked and lost. This is why we don't let our music fly with love and inspiration all the time. Our egos prevent us from focusing on the *process* of practicing and improvising — which is what we need to work on to get our true creativity to shine through.

MISSION: EGO CONTROL

A properly trained ego, however, can supply the drive to go forward, the will to succeed, the tenacity to hang in there, and the courage to



Mastery Class

take actions that support our goals. But we must keep our egos from polluting the creative process with desire and fear.

To do this, actively cultivate an attitude (I call it a space) in which you can become comfortable with new musical material or processes in increments. Simultaneously maintain a detached yet attentive attitude, receiving the music that comes through you with deep respect and awe — *regardless of the quality of the sound*. The quality of your state of mind is more important than the quality of the sounds you may produce as you practice these initial steps. Once you can maintain this state of mind while practicing, it will ultimately lead to a much higher quality of sound and music.

♦ **Step 1:** Let your mind become quiet yet attentive, focused yet detached, as you sit at the instrument. Relax every part of your body, but keep your posture straight. Imagine that your arm is being raised up to the keyboard by someone else, and watch as your fingers effortlessly touch the keys, seemingly of their own accord. Use this simple exercise to give yourself a moment to relax and tune into your inner self while you touch the piano — the moment at which your ego usually starts obscuring the reality of your musical potential with expectations. Try this for a couple of minutes per day. Stop when you feel your thoughts encroaching on your quiet space of detached observation, or when you become impatient. In essence, you're learning how to simply touch the piano while in the space.

Achieving the space may or may not come easily for you. Learning to sustain it may require meditation, deep breathing, yoga, or any of a number of other practices. (I outline several in my book, *Effortless Mastery*.)

♦ **Step Two:** Learn how to get around the piano in the space, resist the urge to edit, and play only a couple of notes without reference to any known material.

♦ **Step Three:** Keep that freedom of movement and intuition while playing within a form or in time, using brief portions of material that's familiar to you. From that space of complete inner quiet and detachment, watch your hands play of their own accord, playing what they know how to play, not what you wish they could play. You may notice that your hands play much more simply; they may leave out parts, or they may play a melody incorrectly.

The information we get from practicing Step Three gives us the clearest indication of what we need to do later. Before we achieve a level of mastery with any material, we need to investigate it the way scientists search for the right components for a vaccine. On the way, they may fail thousands of times. If they don't get through the failures, they'll never find what they're looking for. Yet most musicians have a very low tolerance of the pain of progressing through mistakes. The avoidance of unfamiliar or seemingly difficult material leaves gaping holes in the basic skills of an improviser, deficiencies that remain forever ready to bite one on the metaphoric you-know-what whenever the money's on the table. If you avoid mistakes, you obscure information that may tell you what's ready to come out of the oven, so to speak, and what still needs work. As you practice Step Three, experience your mistakes, and simply observe them. Your hands are showing you what you can do and what you can't do.

At this point, we're also working on discipline. Many times we practice something with the intention of focusing on a single issue. But what happens after ten minutes? We end up playing the whole tune, or just rambling. Nothing can be accomplished while playing in real time because we only have time to *access what we already know*. I call this negative practicing. ➔

The Learning Diamond



The Learning Diamond is the fourth step of mastery. It illustrates four goals for learning your material: playing effortlessly, playing perfectly, playing an example in its entirety, and playing fast. Always play effortlessly, because that is the space you've been establishing in the previous three steps — that space is your teacher. You can choose up to two of the other three goals at a time. If you want to play an entire example, exercise, piece, or passage perfectly, then you must sacrifice tempo: You may have to play it much slower than your ego wants to play it. How slow is that? As slow as it needs to be while you're in the space. People who do this improve so fast it amazes them. When the fingers move slowly enough to perform a task effortlessly, they develop a physical (kinesthetic) memory of what they have to do. This allows performance at a later time to become effortless, automatic, and confident.

Let's say you want to play an example perfectly and up to tempo. What must be sacrificed? Playing the entire example. How many notes will you be able to play? As many as you can play from the space, as many as you can play effortlessly. If you have a very fast line, that may be one note. The second note may make you tense up. If playing two notes is effortless, then you can work on the choreography to make playing the third feel effortless. You could isolate the middle of a phrase, then go back and knit it together with the beginning.

I don't recommend the third option, sacrificing perfection, too often. But once in a while it's great to clear the neurological pathways. Maintain the space, take aim at the line, and play the entire example up to tempo. Let the notes be as wrong as they need to be, let the fingers fly, and feel the arc of the line.

Whether you're practicing passages that are rhythmic, harmonic, or melodic, practicing from this effortless space allows you to attain mastery on a level you may never have imagined. How easy should the line, harmony, or rhythms feel? As easy as dropping one finger on a piano key. How relaxed should the body feel while performing new, seemingly complex tasks? As relaxed as dropping one finger on a piano key. How open and accepting should the ears feel? As open as when you meditate on the sound of one note played on the piano.

This way, you can approach new material while remaining detached, playing a note or two at a time, perhaps playing a couple of chord changes, allowing your hands to discover these new notes. Ultimately, the goal is to maintain that space while improvising and performing, and when you do, it's like swimming in an ocean of brilliance. Your conscious mind beholds your flood of creativity and growth without impeding it. Achieving total mastery over the language of music while retaining the innocence and spontaneity of a child is what I call effortless mastery.

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Your mixer

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OK, you see what's happening: digital mixers are looking pretty cool. After all, they've got incredible sonics, built-in effects, and the automation capabilities you could only dream about before. But if you hook that puppy up to the NoiseRacket analog soundcard that came with your computer, you're right back in ****ville. (Rhymes with "Snapville.")

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Mastery Class

If we rush when we play, then what are we practicing? Rushing. If certain chord changes don't come out clearly or we don't have control over them, they'll never get better just because we go over and over the tune. Those changes will always be poorly played, unless we can quiet the mind long enough to focus on only those changes that are in need of practice. Then we need to adopt a coherent approach to studying them. The art of practicing is to isolate pieces of harmonic, melodic, or rhythmic information that we haven't mastered, and practice them perfectly until we truly possess them. Focusing on the core of our problems is like taking a scalpel and precisely cutting out the imperfections in our music.

Now we take the next step (see "The Learning Diamond" sidebar on page 32).

MASTERFUL CONTROL

What is the value of mastering just two bars of music? The value lies in the effect that mastering complex musical and physical models has on your playing in general. Each new model that you digest completely upgrades the level of your technical freedom. By technique I mean everything that has to do with the language of music, not just things having to do with finger speed. Someone who has mastered technique may consider himself or herself an artist, but is some one who speaks English well automatically a poet? No. Mastery of technique is just the minimum requirement.

That's where the expansion of the spiritual side can give a musician something to say with that technique. The inspirational or spiritual

side of you cannot be ignored in favor of technique. By spiritual I mean everything from the groin to the crown chakra, a wide-open, completely non-denominational interpretation. To me, all urges, emotions, and aspirations sound beautiful when converted into tonality.

The trick is not to give up on practicing a particular exercise until you hear yourself playing the information mindlessly, as you would play something as familiar as "The Star Spangled Banner" or "Happy Birthday." Wait for the cake to be fully baked. Those who can stay clear-headed and persist with the work will progress very well indeed. Immersing yourself in the emotional and spiritual freedom of playing while remaining in masterful control of the material is the apex of human potential.

When I play, I like to imagine that I'm not doing the playing. I imagine that I'm the instrument. If I make myself available, ecstasy will pour through me. Then I can use my consciousness to exclaim my gratitude for being able to have the experience, and that gratitude takes it to an even higher level. Perceiving and expressing gratitude is about as good a use of the mind as there is. ■

A jazz pianist, composer, and educator, Kenny Werner is the author of Effortless Mastery (Jamey Aebersold Jazz, www.jajazz.com). His most recent recording is Beauty Secrets (BMG/RCA) with Billy Hart, Drew Gress, Joe Lovano, and other guests. He's the director of the jazz program at the Banff Center for the Arts (www.banffcenter.ab.ca/cfa). Drop him a line c/o Keyboard magazine at keyboard@mfi.com.

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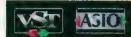
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Chart Your Own Course

*No keyboard teacher around?
Here's how to make progress on your own*

by Ernie Rideout with Marian McPartland & Fred Hersch

So you're doing the Home Schooling for Keyboardists routine, are you? And why not? After all, it is the 21st Century. Or do you consider yourself to be merely "between teachers"? While it's always a great idea to study regularly with a good teacher, you can still improve your playing by leaps and bounds in the privacy of your own practice room. Whatever your reason for going it alone, though, at some point you're bound to face the familiar problem, "What the heck should I work on now?"

Don't despair. Here's some advice on how to plan out the coming weeks, months, and even years of your own well-rounded development, from two of the most experienced players and teachers around: Marian McPartland and Fred Hersch.

CHECK YOUR ASSETS

First off, do a self-assessment of your playing and musicianship skills. "To succeed, you have to have a realistic view of where you are," says Fred. "Do you have technical facility? Are you familiar with harmony? Do you have an interest in composing? Can you memorize things quickly? Can you make up things easily on your own? How good are your ears; can you hear something and play it back right away?"

Or — not? "You have to be honest with yourself," says Fred. "A tape recorder is a great tool for this. Put one on the keyboard, and play into it." You can record a classical piece, a jazz tune, a country waltz, a compelling groove, a solo over a sequence, a left-hand bass line — anything at all.

Listen back and see what you think. How is your rhythm? What about your note choices or chord voicings? How is the balance between your hands? Is your groove in the pocket? "You may find that you're good at one thing, or three things," says Fred. "We all have weaknesses. If you hear that you're not good in a few aspects, it doesn't mean that you're a failure. Don't get stressed out about what you're not playing; accept what it is that you *are* playing. Enjoy it. Treat yourself compassionately."

You can also get feedback from other musicians. Play your tape for a friend. Ask to sit in with a band. Show up at a rehearsal. Many established players will be happy to offer a little one-time advice. Ask what they think of your playing, and what they think you should do to improve. Then be open to what you might hear.

What if there's something about your self-assessment that really bothers you? What if you find yourself saying things like, "I can't play 'Giant Steps' at 212 bpm, I must be terrible"? "If you find yourself saying things

like that," says Fred, "then ask yourself first how important it is that you play 'Giant Steps' at 212 bpm." And that brings us to our next giant step.

SET A GOAL

Before you jump right into practicing those arpeggios, what are the specific things you want to do as a player? Do you want to be able to improvise with other people? Do you want to be a professional studio player? Do you want to make records of your own music? Is there a particular style or genre that you want to get into? Do you want to play like a particular player, like John Medeski, Seal, or George Shearing? Or do you just love music and want to know more about it?

Having a specific musical goal in mind can help you sort through the myriad of keyboardistic options and get over the inertia of starting out. "There's so much information out there nowadays that it's easy to get overwhelmed," says Fred. "You don't have to know every chord. You don't have to be able to play flawless double thirds and double sixths at lightning speed. If you really want to do those things, then learn to do them. But whatever you do, you should understand and do it well. And you should be emotionally connected to it."

Marian McPartland concurs about the importance of having goals, and adds that sometimes a little time crunch can be helpful for reaching them. "I'm dying to learn the music of Wayne Shorter," she says. "But I work best under pressure, so what I'm going to do is hire him for *Piano Jazz* [her nationally-syndicated radio show on National Public Radio], and then it'll force me to learn the tunes I need to learn in time for the show taping — I hope he doesn't get mad at me! For me, it's like Duke Ellington said, 'I don't need time, I need a deadline.'" For those of us with less auspicious connections, one of the best deadlines to set for yourself is to look for and accept a gig. Then you'll really need the next step.

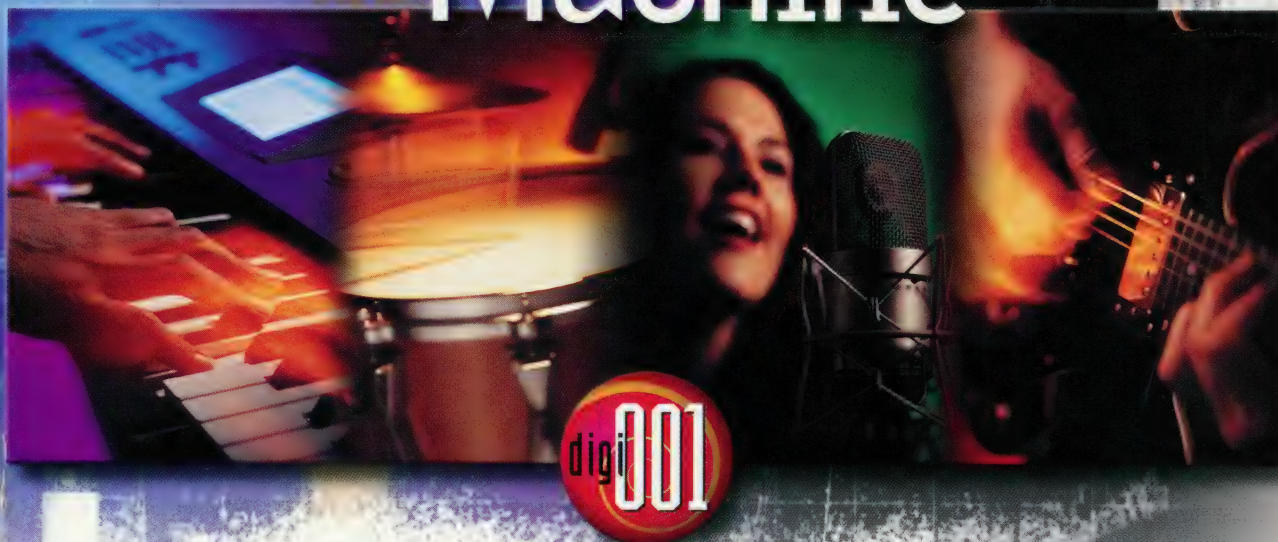
LISTEN CLOSELY

Once you have a goal in mind, you need to establish the steps that will get you there. A great way to do this is with concentrated listening. "Pick one cut from a recording that you're interested in," advises Fred. "Listen to that one cut six or seven times, each time listening for a different musical attribute. Pay special attention to things that aren't in your skill set. The first time through, listen for harmonic things that interest you: chord voicings, progressions, modes, keys. The next time through, listen to rhythmic things: how the keyboard parts sit rhythmically, what kinds of rhythms are used in the part. The third time,

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Chart Your Own Course

listen to how the rhythm section plays together. The fourth time, check out how the phrases fit together, or listen to the composition, or to the keyboardist in particular. Listen to how the soloist leaves space, or how they develop motives." What you're doing is analyzing the things that intrigue you about the track and isolating them. Pretty soon you'll have a nice list of practice topics, and a good aural idea of how to approach them. Then you're ready to start your daily practice plan.

HOW TO PRACTICE

"Don't think of practicing," says Fred. "Think of experimenting. When you sit down at the keyboard or piano, have an attitude of, 'Let's see what happens.'"

"Practicing is like going to a health club: You shouldn't do things in the same order all the time. For instance, I never just sit down and do scales and arpeggios first; that shuts down your ear. I'd do free improvisation first, or work on a tune first.

"Make a list of different musical elements covering the broader areas of harmony, rhythm, composing, and arranging. The specific topics can come from your listening list. Under 'harmony' you might have written '7th chords' or 'voicings in fourths'; under rhythm, perhaps 'sixteenth-note off-beats' or 'dotted-eighths.' Put your list on the keyboard, set the metronome, pick one element, and play with it for a while.

"To develop technique and your ear," he continues, "choose a tune, play it in time, but isolate one rhythmic or harmonic element and play a solo or an accompaniment using only that device for a chorus or more. You might play a chorus using only intervals wider than a fifth, or lines that you play with your hands together two octaves apart, or lines in contrary motion, or moving block chords — whatever the devices are that you want to master."

Most styles of music involve songs or similar compositional structures. Select a couple and begin learning them. "You have to know a lot of tunes," says Marian. "Learn them however you want to: from recordings, from sheet music, from other musicians. A repertoire of tunes is essential. Old tunes and new tunes; you need to keep up with what artists in the genre you're interested in are currently doing. Tunes that maybe you don't like, too, but that may get played in the venues where you want to play. I would spend hours listening to records of Teddy Wilson over and over, trying to duplicate what he did. That's how I learned so many tunes. I've never seen the music for most of them."

To really learn a piece, and to know that you know it, Fred advocates transposition. "Take a tune you're interested in and play it not only in a variety of keys," he says, "but also in different tempos and grooves."

If the piece is a classical piece or a composition where the keyboard part is written out, you don't have to start at the beginning and play the whole thing through right off the bat. Fred likes to outline written pieces. "Outlining is playing only what occurs at the beginning of each bar, or perhaps the chords on just beats 1 and 3, for the entire composition, so you learn the big structure. That will give you a good musical perspective when you come back to fill in the details later.

"Sometimes you can spend a whole practice session on just one thing that interests you. Other times you can cover more stuff, or even just

**Don't
think of
practicing,
think of
experimenting.**

dabble around. Just see what happens. If you keep isolating interesting musical devices on your own and plugging them into your routine of transposing things, you'll be doing a lot better than if you were looking outside of yourself in method books for the latest hip stuff to learn. This way, you develop your technical skills as you develop as an improviser, rather than by just using someone else's patterns and plugging them in. You're generating your own problems to solve. It's more interesting, but it still gives you a structure to practice over."

PLAY WITH OTHERS

Start playing with other people, even if you feel you're not yet ready. "When you play in a group," says Marian, "you develop the ability to listen, to be sensitive to other musicians, and to interact musically. These are things you

can learn only by doing." Setting up a rehearsal or jam schedule with other musicians gives you a regular goal to work towards, and gives you some larger structure to adjust your practice time to.

"The reason I can play solo piano as well as I do is because I've spent 25 years playing with other people," adds Fred. "Playing with other people is the best way to learn about rhythm and time, too."

IMMERSE YOURSELF

"Don't just hole up in your room with records," advises Fred. "Get out to see live music as much as possible, even if it's just the local hotel's lounge act. You have to sit in the audience and watch and feel the music unfold. That will help demystify some of the process.

"Not everybody needs to practice six hours a day, though," he continues. "Some have a greater gift, others know maybe only one way of playing. You can tell how committed you are by whether or not you keep coming back to the piano. If you keep coming back, if you're restless in a good way, if you keep thinking about it, if you're not willing to settle for things being merely okay, and if you want to improve, then I think that's your indication right there."

"How involved or interested you are is really important," says Marian. "Being immersed in music is important. To really improve, it's not enough just being a dilettante."

HANG IN THERE

As you progress on your musical journey, keep your eye not only on your goal, but on the goal of music in general. "Sure, you can use books for information," says Fred. "But ultimately what makes a good musician is how well they use that information. You have to practice that, too: the application of what you're practicing. It's not about how much you know, it's about whether you can use the information for some reasonable goal. And in music, I think, the goal is to tell a story, to take the listener on a trip, to communicate something.

"It's not about learning a bunch of stuff. You do have to get into the process, and just try it and see what works and what doesn't. You don't improve in a logical, linear way. It comes in fits and starts. There are times when you'll be progressing, and times when you'll be on a plateau — but that's how it is for everybody." ■

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Chord Basics Workshop II



Getting Started with Extended & Altered Voicings

by Jim Aikin

Melody and rhythm are found in musical traditions around the world. But the use of chords — vertical sonorities in which several different tones are sounding at the same time — only became important in Europe during the Renaissance. Today, the language of chords is very well developed, and every well-rounded musician needs to know how to use this language.

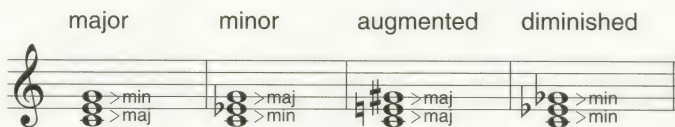
Any group of three or more tones is a chord. If there are only two tones, you have an *interval*, not a chord. (On the other hand, a particular chord *voicing* may contain only two tones, because some of the notes in the full chord can be omitted.) This bare definition of “chord” isn’t very helpful, though. Here, for example, is a perfectly good chord:



Unless you’re playing avant-garde music, you’re not likely to find much use for such a sonority. So the interesting question is, how do you choose which notes to put in a chord, and which to leave out?

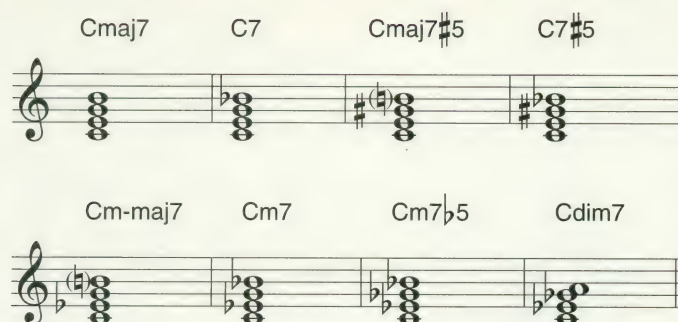
As we discussed in Part I of this workshop (Dec. ’99), the most basic type of chord is a *triad*. A triad is built by stacking two thirds, one

above the other. Since each third can be either minor (three half-steps) or major (four half-steps), there are four possible triads:



The augmented triad gets its name from the fact that the interval between the root (C) and the 5th (G#) is an augmented fifth. Likewise, the diminished triad gets its name from the diminished fifth between the root and the 5th.

Those are useful chords (the major and minor triads being used a lot more than the diminished and augmented), but to create sophisticated chord voicings we need to go further. By stacking another third on top of a triad, we can create a 7th chord (so called because the top note is a seventh above the root). As before, the 3rd can be either major or minor. Here are the eight commonly used 7th chords in their most basic voicings, together with the chord symbols that are used to refer to them. I’ll leave it for you as an exercise to identify the various combinations of major and minor thirds.



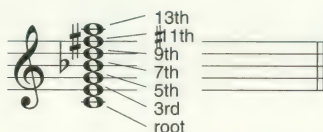
You'll notice that in the last chord, the 7th is written as an $A\flat$ rather than as a $B\flat\flat$. You'll often see this type of *enharmonic spelling* used in chord voicings, particularly as the chords get more complex. Chords are often written so as to get your hands to the right notes rather than to be academically correct — but the side effect of this is that it can make the theoretical underpinnings of the chord a little vague. Play this particular chord on the keyboard and you'll see at once that you're looking at three minor thirds stacked up. Some other ambiguities that crop up in the spelling and naming of chords are not so easily eradicated.

Take another look at that $C7\#5$. What's the interval between the top two notes? It's a diminished third (only two half-steps). This brings up an important fact: Even though I started out by talking about stacked thirds, what matters is not the sizes of the intervals from note to note within the chord, but rather the relationship of each note to the chord root. A 7th chord built on the root C will have either a $B\flat$ or a $B\sharp$ as its 7th. (The $B\flat$ in the $Cdim7$ is a special case, and can safely be ignored.)

Also worth noting: A $C7\#5$ will often be referred to in a chart as a $Caug7$. In this case, the "aug" refers to the fact that the C triad is augmented. In chord notation, there's no such thing as an augmented 7th, because the note an augmented seventh above the root would be the octave.

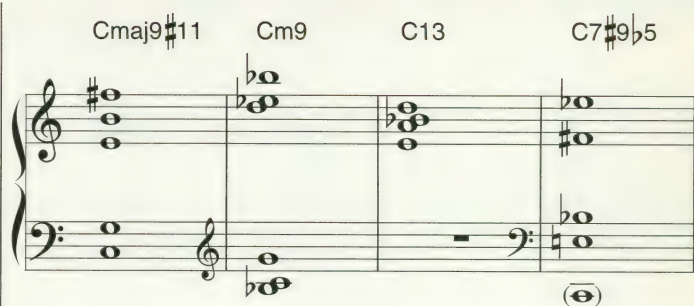
The size of the interval between the 7th and the note immediately below it (the 5th, in the examples above) can have a major impact on the sound quality of the chord, but it doesn't have much to do with the fact that the note is a 7th. It's a 7th because of its relationship to the root, which in the chords shown here is C.

Just using triads and 7th chords, we have a sizable harmonic vocabulary to play with. But why stop there? Why not stack up a few more thirds while we're at it?



This rich-sounding chord shows the basic underlying structure of a $C13$ chord. As you can see, the upper notes (the D, $F\sharp$, and A) are named with reference to the interval between them and the root. The D is a ninth above the C, so it's the 9th of the chord. (By the way, the convention here at *Keyboard* is to spell out the names of pure intervals, such as "ninth," but to use numerals when referring to the function of a note, such as the 9th, within a chord. Not all publishers follow this convention.) The 9th, 11th, and 13th are called *extensions* of the chord, and voicings that contain these notes are called *extended voicings*.

The root and 5th (unless it's an altered 5th) can usually be omitted without affecting the sound color of the voicing. Just to whet your appetite, here are a few voicings that have been built using the notes in the extended chord structure. I've altered a couple of the notes in the last chord — an idea that we're about to explore in more depth.



ALTERED VOICINGS

As you might expect from the fact that there are four different triads, which are created by moving the 3rd and/or the 5th up or down, the notes of the extended chord structure can also be altered by moving them up or down.

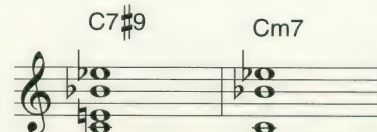
Any note except the root can be altered by moving it up or down a half-step. For some notes (the 3rd, 7th, 11th, and 13th) you have a choice of two pitches, while others (the 5th and 9th) can be on any of three different pitches.

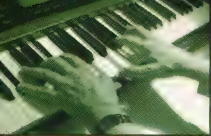
Here's a fairly complete list of the possibilities for the notes of the extended chord:



You'll note that there is some overlap. The minor 3rd ($E\flat$ in a C chord) is the same chromatic pitch as the sharp 9th ($D\sharp$). Likewise, the sharp 5th ($G\sharp$) is the same as the flat 13th ($A\flat$), while the flat 5th ($G\flat$) is the same as the sharp 11th ($F\sharp$). So how do we decide whether a chord is a C minor, or whether it's a C with a sharp 9th?

Sometimes the answer to this kind of question is more or less arbitrary. Other times it depends on how the composer or arranger is thinking about the underlying scale from which the chord is derived. (Chords derived from scales? Gadzooks! Looks like we'll have to schedule another installment of this series to talk about those relationships.) Normally, a chord can only contain one 3rd. The 3rd is an important note, because it defines the entire chord as either major or minor. So if we see what looks like both major and minor 3rds in a single chord, we'll usually analyze the chord as having a sharp 9th:





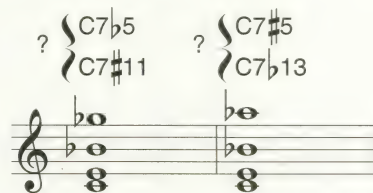
Chord Basics Workshop II

In the previous chord I've spelled the sharp 9th as E♭. Technically it should be a D♯, but the E♭ spelling is at least as common. When the major 3rd is missing, the same note is unambiguously interpreted as a minor 3rd. If there are both major and minor 3rds but no 7th, the chord is probably better analyzed as a straight major-minor triad — more often found in 20th Century classical music than in jazz — rather than as a sharp 9:



At least with a sharp 9 chord, we can tell what's what. With other chords, how you analyze it or what you call it may be a matter of taste. It may depend on how you think about the functionality of the chord. Do the chords below have, respectively, a flat 5th and a sharp 5th, or a

sharp 11th and a flat 13th? The name you choose will probably depend on the surrounding harmonic context.



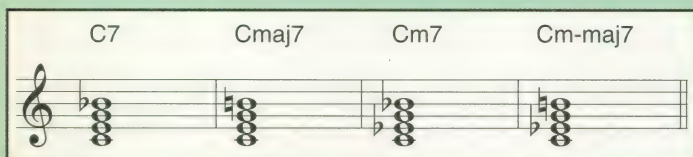
The best way to learn how altered and extended voicings work may be to take one chord tone at a time and play with it. [Ed. Note: You can also dig out some of the past Master Classes written for Keyboard by Andy LaVerne, notably those in the Apr. '91, Dec. '97, May '99, and Sept. '99 issues.] Listen to the differences in color in the following chords, in which the 5th is altered or omitted:

CHORD SYMBOLS

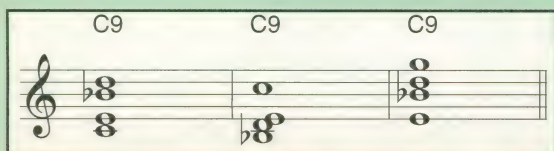
We've been tossing chord symbols around pretty freely in this article. They're not constructed by picking numbers at random. Here are the principles we use at *Keyboard*:

- ♦ The basic form of the extended chord is the one with the major 3rd, minor 7th, and natural 5th, 9th, and 13th — the form shown near the beginning of this article. If you see a chord symbol that has only a root letter and a single number (for example, A9 or D13) the notes in the basic extended chord are being used.

When forming chord symbols, you need to do two things: First, make sure it's clear what notes are in the chord. Second, mention any alterations from the basic notes. For example, the symbol C7 refers to the chord with a C, E, G, and B♭ — the *dominant 7th* chord we discussed in Part I. If you raise the 7th to a B♯, you have to change the symbol to Cmaj7. If, instead, you lower the 3rd (C, E♭, G, B♭), the correct symbol is Cm7. (At *Keyboard*, we use a simple "m" to mean "minor." Some publishers use "min," and many musicians use a simple minus sign.) If the 3rd is lowered while the 7th is raised, you have the awkwardly named Cm-maj7 chord:

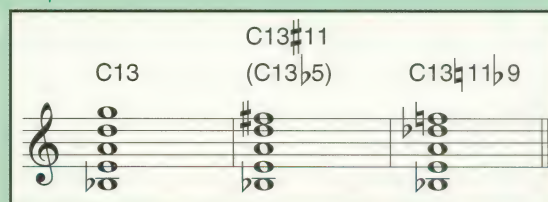


- ♦ To figure out what number(s) to use in the chord name, check the highest component of the basic structure that it contains — that is, the component furthest "up the stack" in the extended chord, not the component that happens to be at the top of a particular voicing. The three chords below are all described by the same symbol, even though the 9th is on top in the first voicing, the root is on top in the second, and the 5th is on top in the third. The root (C) has been dropped from the third chord; it could also be correctly called an Em7♭5, depending on what's going on in the chord progression.



Because the chord is named by its highest component, if a chord is described as a C7, we can assume it doesn't have a 9th, 11th, or 13th. (In jazz fakebooks and performances, this idea is tossed out the window. A jazz player who sees the symbol "C7" will almost always play an extended voicing with some type of 9th or 13th.) If the chord is called a C9, the 7th is assumed to be present, but not the 11th or 13th.

A C13 is assumed to contain a 7th, and may or may not have a 9th — the 9th is optional unless it's mentioned specifically. But oddly enough, a 13 chord probably won't contain an 11th. This is because the 11th has to be either sharpened or not. A non-sharpened 11th over a major 3rd is such an odd note (see below) that the composer or arranger would surely want to indicate it (either as a ♯11 or as an add4 — and don't worry, we'll get into the whole question of what that "add" notation refers to in Part III of this series). The sharp 11th, on the other hand, is an altered step, so it would have to be indicated as such in the chord symbol. The voicings shown below have no root, but that doesn't affect their harmonic meaning. The C13♯11 is a fairly ugly chord; you may never have occasion to use a voicing like this. Jazz and pop/rock/R&B players avoid it, because of the clash between the ♯11 and the major 3rd. It sounds a little more interesting if the 9th is flatted, as shown:



The flat 13th — G♯/A♭ in a C chord — is often analyzed or referred to as a sharp 5th, depending on whether the chord also has a standard 5th, and on what the arranger had in mind. If a sharp 11th is referred to in the chord symbol, it's probably safe to assume that the voicing also contains a 5th, because if it didn't, the note would more likely be described as a flat 5th rather than as a sharp 11th. But here again, it's a matter of taste, and how the composer or arranger hears the chord.

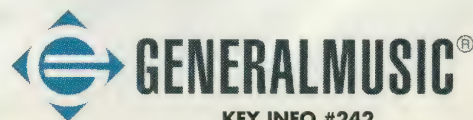
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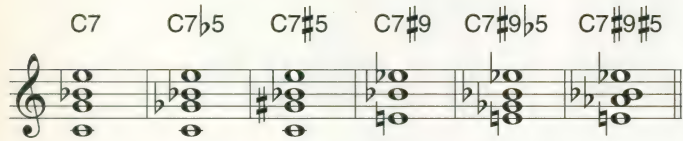


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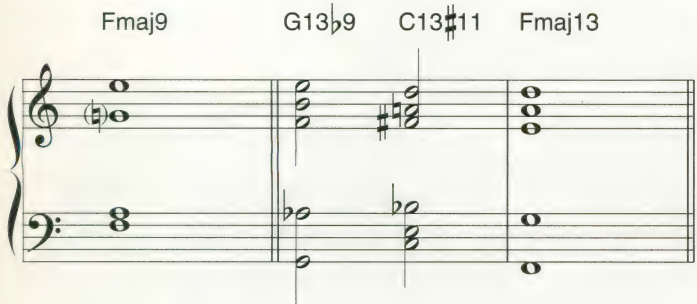
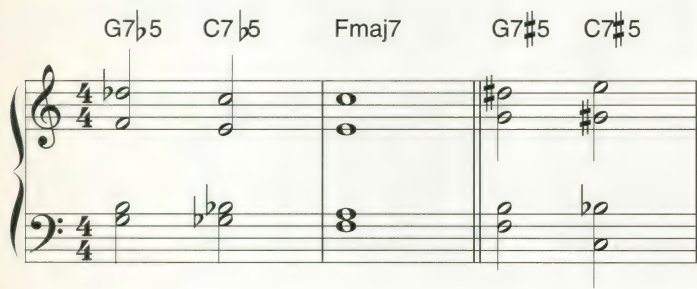
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Chord Basics Workshop II



Next, let's pick one or two of the chord types above and try using them in some simple progressions. We'll use the kind of smooth voice leading that was explained in Part I of this series.



If you pay attention to the voice leading, it will often suggest which chord type to use. Look at how the top line in this example defines the color of the progression:



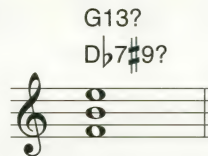
FINDING THE RIGHT NOTES

As you'll remember from the first Chord Theory article, voicings are often formed by leaving out some notes, transposing others up or down by an octave, and perhaps doubling one or two notes as well for a thicker voicing.

But with so many chord notes to choose from — all of the notes in the scale, in fact — you may not be able to see, right off the bat, which notes you ought to use, or where to put them in a voicing. So let's set up a few ground rules. As always, these rules are made to be broken: The only real rule is, "Play whatever sounds good to you." But if you understand why other players have chosen certain notes and avoided others, you'll be equipped to make intelligent choices.

Rule #1: As I mentioned above, the root and 5th can be dropped. Since these two notes are the foundations of the chord, omitting them will give your voicings the kind of ambiguous flavor that's typical of jazz. Anyway,

the bass player is probably playing the root, so there's no need to play it on the keyboard. This voicing is typical of jazz comping:



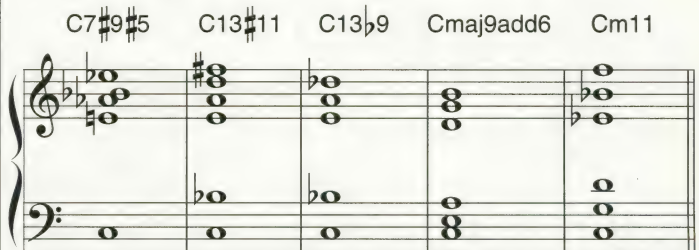
What's the root? We could be looking at a G13 chord — but these notes could just as easily be the upper structure of a D \flat 7 \sharp 9 (with the B \flat being an enharmonic spelling of C \flat).

This fact is the basis for the practice of *chord substitution*, which jazz players often use to enrich their harmonic vocabulary. Books have been written about chord substitution. Most of them start with the idea that, for any dominant 7th type chord, you can substitute the dominant 7th whose root is an augmented fourth (diminished fifth) away from the original root. For a G7 voicing, for instance, you can substitute a D \flat 7 voicing. The example above should give you a hint about why this works. If you want to go further, you can play other rootless dominant-type C chords and re-analyze each note with reference to a G \flat root.

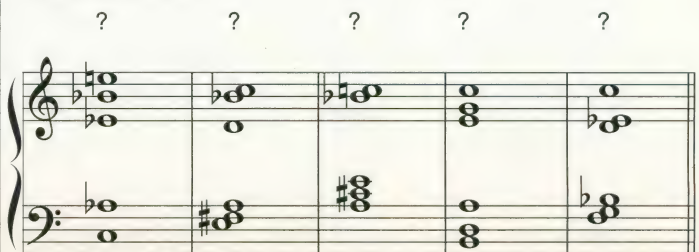
The open G7 voicing shown above is very versatile. When a jazz chart calls for a progression like E7-A7-D7-G7, you'll often hear the pianist play some variation of this:



Rule #2: In general, the higher notes of the basic chord structure (the 9th, 11th, and 13th) should be placed somewhat higher in the voicing than the root, 3rd, 5th, and 7th. There are many exceptions to this rule, and at least one highly respected jazz pianist, Clare Fischer, develops his unusual harmonic colors specifically by violating it. But it's a good starting point for developing your voicings. It explains why these voicings sound good —



— while these, which contain the same notes transposed to other octaves, sound so odd that we can't really say what harmonic function (if any) they serve:



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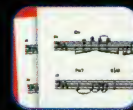
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Chord Basics Workshop II

Rule #3: The 5th and 9th can be split. That is, a single chord can contain both a flat 5th and a sharp 5th, or both a flat 9th and a sharp 9th:



If we carry this idea to its logical conclusion, we might end up with this rather intense but very sonorous voicing:

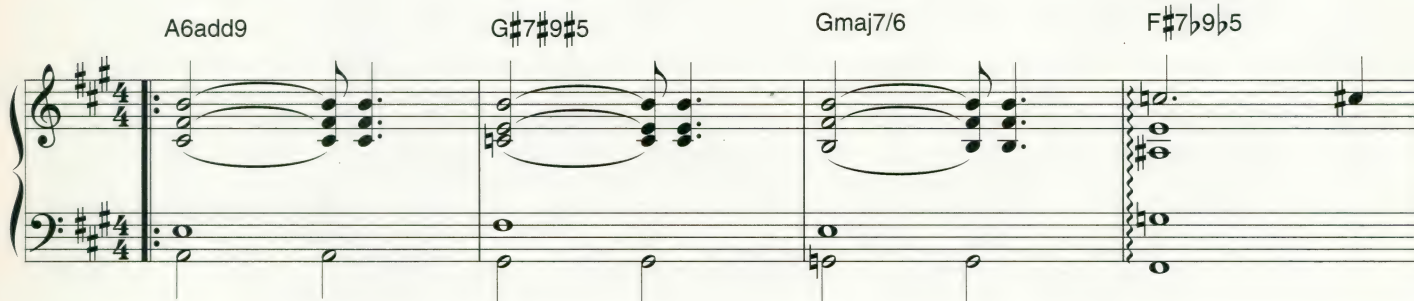


Have fun exploring these resources! The two examples across the bottom of the page show how you might use extended voicings in a couple of progressions. Try substituting some voicings of your own and see what happens. For instance, if the last two bars of the final example seem a bit tame, you might try something like this:



In the next part of this series, we'll cover the esoteric subjects of add, sus, and bitonal chords, and give more examples of how to use extended and altered voicings in progressions. ■

Senior editor Jim Aikin once broke up a perfectly nice folk rock band by playing too many flatted 9ths and sharp 5ths. He was playing bass at the time, which made it pretty unforgivable.



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Wall of Vinyl 3

\$99⁹⁵ Audio

New

Behold... Wall of Vinyl 3. This 2-CD set SLAMS down the Hip Hop, Rap and R&B sure to hang your music on the wall in gold! Crackly, poppy, clean construction kits, hits, horns, piano, scratches, guitar, bass, synths, pads, strings, vocals, percussion & more! This series is the dominant force in the industry... so get yourself some!



Roots of the Pacific

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New

A complete island paradise on CD! Explore the rich rhythms and intoxicating sounds of the Pacific Islands! Hypnotic, tribal rhythms in ensemble and solo performances, drum and percussion hits and loops, chants, spoken words and beautiful ambient recordings, perfect for any mix!



Breakbeat 2

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New

All new, all fresh, all never-before heard breaks for you beat-headz & digital funkmasters! Breakbeat 2 features extended breaks with variations - no filler! - as well as da beatz dat makez da breakz. If you're looking for the sound of a drum machine, look elsewhere; but if you want only hot, greasy honey-suckin' beatz... you know who to call!



Xperts of Techno

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New

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New

¡Ritmo de las Americas! Mark Walker lays down slamming Cuban, Brazilian, Puerto Rican & Latin American rhythms on a full kit, plus the most superb hits & cymbals - some say the best ever recorded! 9 levels of dynamics & tempos from 84-148 bpm in 6-8 bpm increments. If you dug Peter Erskine - Living Drums, you're going to LOVE this!

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Big Beat
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L.A. Riot 4
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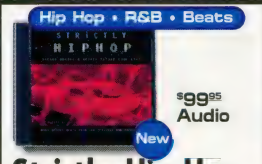
Things That Go Bump in the Night
Top-notch sound design with a rich, dark undercurrent- pulsar data, proprietary synth engines, percussive & pitched loops, hits, crescendos & ambient beds like no other! "...jam-packed with exotic sonorities that practically ooze out of the CD tray." - Keyboard



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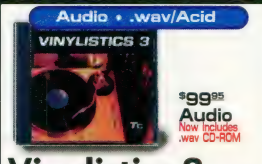
Loopzilla Underground
The monkey is back! He's been lurking in the Underground, gathering the newest & freshest sounds- Now his deepest construction kits, hits, scratches, guitar stabs, breaks, Rhodes, bass, horns & more are all yours! From the producers of the acclaimed Loopzilla & Wall of Vinyl, the money is here!



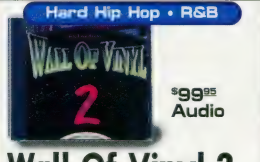
Strictly Hip Hop
From the makers of Strictly RnB and Vinylistics comes this new collection of the freakiest beats & breaks! Jam-packed from 59 to 112 bpm plus all the hits that made each loop. Lush s/o grooves mixed with mad, hectic double-time beats, in Street, Hip Hop, RnB & Soul- get busy and make ya own wildstyle trax!



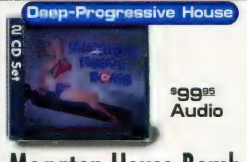
Freaky Jazzy Funky
3 discs of construction kits, drumloops & fills, drum hits, bass loops & riffs, percussion loops & sounds, guitar loops & riffs, horns, synths plus midi files! Get your freak on with the acclaimed producer of Phatter Phunkier! "FJ is a generous helping of grooves ranging from Prince-esque loops... to southern blues..." - Keyboard



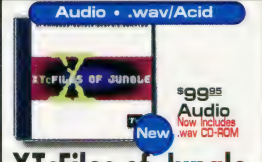
Vinylistics 3
Stop Searchin! The Rephelex Team has done it again! Another massive amount of stretching & bending of ol' Ruffstyle Breaks- keeping all the dust and dirt. Ruff Hip Hop and Funk Breaks with that distinguishing Vinylistics sound! ...and now comes with it's own .wav/Acid™ CD-ROM!!! Also Available: Volumes 1 & 2



Wall Of Vinyl 2
Wall of Vinyl 2 is so jam-packed with the real Hip Hop, it'll take you back to your music. No players here, just raw, pure breaks, construction kits, scratches, horns, vocoder, guitars, live drums, rhythmic FX & more! "...the best hip-hop collection we've heard. Buy it even if you don't like hip-hop!" 10 out of 10 - Computer Music, UK



Megaton House Bomb
From tech & speed garage to deep house & nu-disco- we dropped a bomb on you... 2 CD's jammed with construction kits, grooves, fills, vocals, bass, keys, guitar, fx, hits and way more! This CD has an impressive pedigree... and if house is your thing it deserves a place near the top of your shopping list. - Future Music, UK



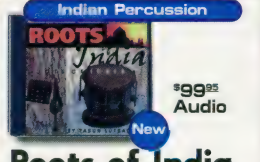
XTFiles of Jungle
These rollercoaster beats will set off your system like nothing else. They're super-fast & will delve you DEEP into the dark side of underground dance. Inject the true sound & energy of this phenomena with extended loops reaching 168 bpm, super-fast breaks, construction kits, rolls, pads, chords, sub-basses, FX, hits, drumloops, bass loops & more!



atomizer
Atom Heart releases his wild & wacky world of digital percussion on an unsuspecting public! These are not typical drumloops & breakbeats, but beats so bizarre, abstract, odd-tempo and atmospheric, that Atom's abused gear screamed for mercy as he formented it in this incredible display of crazed genius!



Pod
Inside the pod, your fear grows... From one of the 10 star producers of "Bump in the Night", over 1,000 unsettling events, loops & atmospheres. "Pod provides metallic, organic & downright terrifying blocks of sound... a must-have release for any programmer looking for a pure slice of sound design madness..." 4 out of 5 - Sound on Sound, UK



Roots of India
Explore the vast musical styles of India with percussion loops & hits from pakhwai, tabla, dholak, ghungroo, dhol, mridangam, ghattam, khanjari, madol, khol, tuntuna, dholki & more! This group of seasoned Indian musicians perform traditional rhythm patterns of devotional, folk & classical styles to perfection.



Roots of South America
From the heart of South America. "It's a feast of Latin American percussion- vibrant, tasty grooves in styles like candombe & murga (Uruguay), sava (Bolivia), loncomeo (Chile), atoxe (Brazil), using both trap set & hand percussion. Fabulous tracks!" - Keyboard



Carib'Bean Killers
Jump aboard this express trip to the Caribbean with the world-famous Fantan brothers! With authentic construction kits, fills, bass, loops, samples & tons more from Haiti, Cuba, Jamaica, Trinidad, Guadalupe and Martinique, these traditional rhythms are sure to take your production straight to the islands!

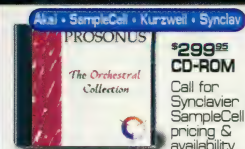


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Be prepared for rarest percussion loops & sounds. Incredible African & Brazilian performances using berimbau, kutu, talking drum, cajon, fedounoun, baja, shakers, bells, glock, rain sticks & more! Raricussions is the ultimate ethnic percussion tool and a perfect compliment to it's predecessor, Basicussions.



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Orchestral Collection

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The Drum Doctor's Drums 2

Over 1,500 samples from the Doctor's library. "If you're using a sampler for drums, and want to fool people into thinking they're hearing the real thing, Ross Garfield would like to talk to you. No question, the choice of instruments, the tunings, and the recording quality is awesome..." 5 out of 5 - Keyboard



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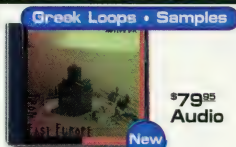
Synth City 2

Enter Synth City 2 - Vector Impressions. Discover the depth of the Korg WS & WS-AD and Ensoniq VFX & SD2. This disc will intoxicate you with evolving textures, string pads, bass, bells, organs, atmospheres, ethereal pads, pianos and so much more of the phattest and most enormous synth sounds available.



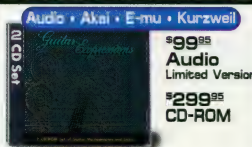
Pocket Syndrome 2 - Rock Guitar

All new "in the pocket" rock guitar loops & riffs at multiple bpm's & keys, 20 styles, 1 to 2 bars long and ready to go! "...the rock stuff absolutely burns. These grooves are right on the money." - Keyboard



From East Europe

This collection of plucked strings, percussion and winds will give you the authenticity to float your production to Athens! Multiple articulations of individual notes (strings & mutes), effects (tremolos & glissandos) and phrases (at multiple tempos) from jubus, oud, buzuki, saz, tsifteli, zeibekikos, accordion, percussion and more!



Guitar Expressions

Rock, Funk, Techno, Industrial, Jazz, Blues, Reggae, Country, unique sound design and more. Multi-samples, licks and riffs that cover all major styles and are laid out so "playable", bringing the most incredible realism and flexibility. "This disc has become my secret weapon!" James Wooley - Nine Inch Nails



Dave Samuels - Marimba & Vibes

The finest multi-samples of marimba & vibes ever recorded! Multiple mallet variations & dynamics, chromatic samples of all the instruments: Yamaha YV3710-3-1/2 octave vib & the YM5000-5 octave rosewood marimba. Sustained & muted notes, rolls, riffs & more!



TR-808

The TR-808 is the staple for every dance style & with one listen to this CD, you'll immediately recognize those "in your face" drums & percussion that have been grooving you for years! Sounds & loops from the original team! "Realism City..." As for the quality, it's as good as the machines themselves! 5 out of 5 - Keyboard



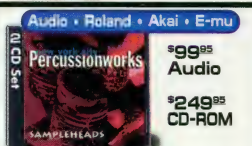
Strictly R 'n' B

Prepare yourself for Nu-Classic Soulbreaks! From the makers of Vinylistics and X-Static Goldmine comes over 800 exclusive swing and soul loops with all the hits. A dope mixture of slow and groovy loops from 60-100 bpm. All grooves come with variations and drum samples, so put this disc on the top of your list!



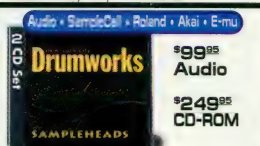
The Vinyl Frontier

Join Simeon's exploration of the dark side of Trip Hop with these gritty, nasty lo-fi beats. This lower-tempo "Portishead-style" Trip Hop collection of dance loops is authentically vinyl sounding, with extended grooves & variations from 72-111 bpm; and all the drum hits that made each loop are here! Get into the open frontier!



NYC Percussionworks

Whether you're looking for that perfect conga part or a Hip Hop tamborine groove, it's all here! 7 of NYC's hottest percussionists lay down 100's of loops, hits and samples. As the follow-up to NYC Drumworks, these two sets are totally interactive (in tempo and style). "Considering the selection and the quality of performances, it's a steal." - Keyboard



NYC Drumworks

Funk, Rock, Hip Hop, Latin, R&B, Brazilian, Rock-a-billy, Reggae, Gospel, Country, Thrash & way more! Six TOP session drummers laid down the most intense loops, with matching hits, using blastix, brushes & mallets at multiple tempos per groove & style to make this the most complete drumloops disc ever! "5 out of 5" - Keyboard



Performance Loops Drums Vol. 1

Over 1,000 live drumloops with variations & fills, from R&B and Hip Hop to Rock & Pop. Edited to exact tempos for perfect synchronization with your sequencer, this disc has every element needed to construct a complete track played by a real drummer.



Groove Dimensions

Top LA film score artist, known for his work on "Bump in the Night", laid down the finest beats & grooves, then crushed & mutated them with DSP & proprietary algorithms. The result: other-worldly drums, dub-infused pulsations, gritty lo-fi beats... "Good stick work, solid sound design—What more could you ask for?" - Keyboard



Alien Artifacts

As if from some lost alien city on the far side of the moon, this disc evokes the ghostly echoes of a long-dead interstellar civilization—ambient sound design, events, loops & more. "The AA sounds are stunning & unique... These samples will give you a leg up on professional-sounding electro-ambient or industrial music..." - Keyboard



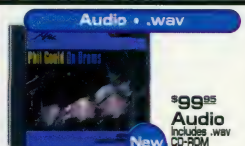
Alien Guitars

No funky, wah wah, or metal guitars in this set—These guitars were struck, beaten, brushed with chains, prepared, yelled into & abused! Then radical post-production turned their screams to mutant sound entities. "Whether you're in search of abnormal rhythmic loops, strange aural environments or striking sound FX, AG serves it up." - Keyboard



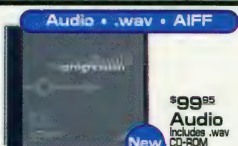
Psychedelic Trance & Goa

Brand new sounds, loops & midi files for Trance & Goa! Tons of Construction kits, hi-fi drumloops, basslines, synthlines, 303 basslines, synth textures, acid patterns, vocoder loops, 808/909 hits and way more! Merge this into your production! Also available: 1-UK Garage 2-Drum&Bass 3-Big Beat & Electro



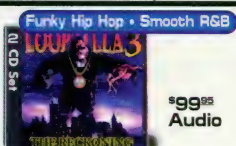
Phil Gould on Drums

Former Level 42 drummer, Phil Gould, brings you hundreds of specially recorded grooves & classic loops from his archive. Phil performs a massive range of styles ranging from 70 to 165 bpm plus there's a selection of high quality single hits too. With a similar feel to Gota, this collection will not disappoint!



The Progression

The long-awaited sequel to the original Rhythm of Life! Creative, modern, "out there" percussion at its best. Grooves with different mixes, isolated elements, hits and tons of different tempos. There's even a section with extreme processing that you just won't believe! The wait is finally over!



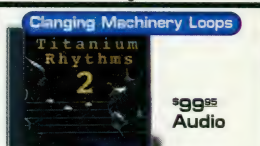
Loopzilla 3

Loopzilla 3 busts out of the cage with 2 cds of the smoothest Hip Hop & R&B drums, guitar, bass, Rhodes, vocals, horns, some turntable wizardry & way more! Featuring the funky talent of Boo Ya Tribe and The Dazz Band, there's no other source for Hip Hop that's oh so smooth & funky. Also Available: Vols 1, 2 and Funk Guitar & Bass



MPC 2000 Production Tools

From the makers of Vinylistics & X-Static Goldmine come the ultimate drum sample CD for the MPC 2000! Over 2400 House, Techno & Hip Hop loops & fills, plus hits from TR909, 808, 606, Linn9000, snares, hi-hats, toms, crashes and more!



Titanium Rhythms 2

The cold hard world of Titanium Rhythms returns! 500+ new distortion loops, soundscapes, rhythmic fx, textures and more! With tempos from 80-180 bpm, and ear-bleeding noises, TR2 brings a hard and distorted view to industrial loops and atmospheres. "This stuff is intense, and every track has its share of goodies." - Keyboard

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The Piano Is Not a Gymnasium

Build a solid foundation of keyboard technique without busting your chops

by Terry Trotter

Keyboard technique isn't about athletics; it's about art. It's just a means to get the music out. Ultimately you want to have a variety of touches and a range of dynamics at your fingertips. You want to have the coordination to move around the keyboard with confidence. In essence, technique is about control. Most people have no trouble getting the strength necessary to play demanding pieces — it's the control of articulation and dynamics that are the problem.

In fact, you don't have to practice playing *fortissimo* at all. That's how a lot of players get hurt. That old concept of having your sound reach the last row of Carnegie Hall can be a dangerous one. Some people feel that when they're practicing technical exercises, they need to push the volume and get a lot of sound, but it's not true.

Band situations present another hazard. When they get started playing blues or rock, for example, many players basically just whack the piano. Even when you have control of the volume of electronic instruments, when the band is playing at 120dB onstage, you're likely to try to compensate by playing harder than you ought to, if for no other reason than just to keep up with the intensity.

Still, to obtain technical facility, you do have to make your body do things it may not be used to, push it a little bit in order to develop. It doesn't want to do pianistic things, especially if you didn't learn to do them as a kid. If you're an adult, you have to push the tempos at which you practice just a little bit, gently. Your system is not going to want to do it. So be careful; if you push yourself too much, tension may creep into your playing and you'll risk injury.

Be aware of tension as you practice and perform. If you start feeling really tired, you need to stop. It's not like doing push-ups or arm curls. People try to get that last rep out when they're doing bench presses at the gym. You don't want to do that on the piano. If you do, eventually you won't be able to play at all. You'll be instructed by your doctor not to go near a piano for months.

By adopting a very simple practice routine that combines simple technical exercises with a musical approach and an awareness of your body, you can avoid such disastrous results. Here are a few suggestions for you self-starters, culled from years of teaching and observing fellow pianists, that should get you on your way to developing a solid foundation of technique.

HORIZONTAL MOVEMENT

First and foremost is my concept of horizontal movement — and I don't mean physical movement. Simply put, no matter what you're playing, it should be a phrase that's moving somewhere. Whether it's a short idea applied to an arpeggio or a long one applied to a scale, whether it's a musical line or whether you're just comping, you should make the music go somewhere dynamically. You have to be going somewhere for the music to have the kind of grace that it needs, no matter whether you're playing an exercise or a prelude. Keeping this idea in mind while you practice technical exercises will help keep you from pounding, too.

SCALES

It's not whether you should practice scales, it's how you should do it. It's very important to start at a tempo that's comfortable for you. Find one where you can comfortably play two-

handed scales in octaves at four notes per tick on your metronome. Then you want to find the tempo that is your sixteenth-note limit, where it pushes you just a bit. That's where you want to start practicing. The idea is to feel that you're pushing yourself just a little bit. Then you want to inch the metronome up gradually, so that you're never totally comfortable, but neither are you straining. Plan to practice scales at this tempo two ways: in sixteenths and in eighth-notes.

At the beginning, concentrate on playing four-octave scales legato, where the sound of one note connects or melts into the next, without overlapping. When you're doing any kind of linear technique (such as scales), your fingers should be close to the keys. I don't believe in the hammer touch, where you raise your fingers high. That can be very destructive, even though that was the way that lots of us practiced years ago. Keep the thumb very light and loose. If the thumb is tight, the rest of the hand is going to be tight, too.

As you go up and down the keyboard, you want to have a gliding feeling with no jerky motions involved. In order to do that, the thumb has to move smoothly under the hand, and the hand over the thumb. The wrist remains quiet, not stiff, and in line with the forearm. The forearms should angle inward slightly toward each other. The elbows should not stick out. As you go up and down the keyboard with the hands together, keep the hands in line with your forearms as much as possible. Keep your wrists at about the same level as your elbows. Think of the wrist as being quiet, but light.

As you're moving up and down the keyboard, keep your hands centered in front of your body as much as possible. So as you're moving

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to the right up the keyboard, you would move your body to the right and forward a little bit. And as you go down, move your body to the left and forward. The point is that your arms should be well-supported by the larger muscles of the shoulders.

Your shoulders should be loose, if not relaxed. Relaxing is very good, but it isn't an accurate term because when you're playing, you're using muscles. You want to use them in an efficient way and yet remain loose.

It's important to apply different rhythms to your scale patterns in addition to straight sixteenths and eighths. Try dotted rhythms, triplets, and various combinations of eighths and sixteenths. This will put the emphasis on different fingers, and you'll land in different places in the scale. You'll develop flexibility and control this way.

As you grow as a keyboardist, you're going to run into people who stay in one place, have their elbows out, pull their fingers up, and generally do it all wrong — and they'll still sound great. But for us ordinary mortals, this works better.

FIVE-FINGER EXERCISES

With exercises that use all five fingers but keep the hands in one position for a relatively long period of time, you run the risk of causing irritation or inflammation. To avoid this, I'll have my students do such exercises in only three keys at a time. After a rest stop, do the next three keys, and so on (see Example 1). More advanced students can play these five-finger exercises in thirds. Play this exercise in eighth-notes at a tempo slow enough that you can watch everything and control your finger movements.

The Dohnanyi finger independence exercises where you hold down notes and then move the other fingers can be useful for finger independence (see Example 2). I've brought a couple of well-known pianists to their knees with a couple of those exercises. I said to them, "Hey, you ever try this?" They'd say, "Oh, that's not that hard." They sit down and try to play them, but their fingers keep coming up when they don't want them to. The advantage of these exercises is that they don't make any demands in terms of stretching. You can do them in all keys. If you play them by holding down the notes lightly without using too much weight, and if you don't play them loudly but try different tempos and dynamic levels, they can be very helpful in developing more control.

WARMING UP

One of the problems that pianists have before they perform is that they usually can't get to a piano. When I was with Larry Carlton, he asked me what I did to warm up. He could sit backstage and mess around with the guitar, and I couldn't go out and just run some scales as the audience drifted in. I told him that it's a mental thing. After you get to a certain level, once your hands are physically warm, you just play what you hear, and no warming up is necessary for that. Your technique will rise to your idea.

A good way to warm up before practicing is to play scales at a slow tempo up and down the keyboard with a nice legato touch, in three keys at most.

TONE

The kind of sound you make on the piano is determined by the speed with which you depress

the key. It's a simple thing, but it's really important. Getting a variety of sounds out of the piano is part of technique, too. It's not just about moving your fingers up and down really fast. Sometimes I'll take a ballad, or a lyrical classical piece, such as the Chopin *Prelude* in E minor. Then I experiment by playing with different finger speeds into the keys.

My teacher used to talk about thinking of the key as a spring that has to be compressed, as though you're feeling the resistance of the spring when you start to depress the key. You imagine it, and you go slower into the key that way. That can be nice for getting a lyrical sound. Then when you're going for a light, clear sound, use a quicker motion into the key.

ARPEGGIOS

As with scales, when playing arpeggios you want to find a way to get up and down the keyboard without too many jerky motions of the hand. You want to have your hands glide across the keyboard. At a slow tempo, you want to connect the notes as your thumb goes under your hand: Angle your arm out a little and stretch your thumb a little as it goes under the hand and stretches to the next note up. When you're playing at a fast tempo, the finger actually would get off its note before your thumb hit its next note.

You should never snap your thumb under as you play arpeggios. As you play the third finger on the G when moving upward in a C major arpeggio, the right thumb should be on its way, pretty close to being under the third finger.

LEFT-HAND WORK

I often work on my left hand alone. I might take

Ex. 1. A simple five-finger exercise such as this can be useful in developing efficient, tension-free finger movement.



Ex. 2. Exercises such as these are great for developing flexibility, as long as your hand is as relaxed as possible.



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the Bach *Two-Part Invention* No. 8, and play just the left-hand part alone. It actually works as a piece all unto itself. Or I'll take a tune, maybe a ballad, and play it with my left hand alone. Then I may take a blues in an unusual key, and improvise with my left hand alone, linearly. Then I may go back and forth, having the left hand take a chorus, then the right hand. It

creates a consciousness that carries over into two-handed playing.

INJURY PREVENTION ON THE JOB

In the heat of a gig, some players can get tense as they get into the excitement of the show. When I perform, I make sure that I move my

shoulders around occasionally, even in the middle of a tune. Take lots of breaks, even if they're ten seconds long. Shake your hands out often, to make sure that no tension is building up.

After I land on a chord, I let my wrist give, or rebound a little, rather than keeping it stiff. It's the difference between jumping rope with your knees locked straight and jumping rope with them bent, with a bit of give when you hit the pavement. There's a little cushion that way.

CONCLUSION

With just some simple Bach pieces, some scales, and some arpeggios, you can build a very nice technical foundation, if you're relaxed about it and if you listen to your playing. If you play with dynamics and phrasing foremost in your mind, you'll progress nicely. Make everything as musical as you can.

If you have a wide enough dynamic range, you won't need to play too loud; go for a softer *pianissimo* for contrast instead. Play your scales at different dynamics; it'll help you to concentrate, to have that one quality as a goal. It'll keep you involved. Then take a piece that normally you'd play with a big dynamic range, and play it quietly, or vice-versa. The point is to get the feeling of controlling the dynamics according to what you want to hear musically. It's about getting this whole mechanism — your body and the piano — so that it's at the service of the music.

You've got to have patience for this, especially if you're starting the piano later in life, not as a kid. It's a very slow process, and you can't hurry it. You have to just get involved. You have to get up and practice, and have something to aim toward. Work on some scales, some arpeggios, and some Bach each day. If you don't get to everything each day, no problem. But you can't think in terms of short-term accomplishments. This simply takes years. But during those years, you'll be getting better — it's just not usually as fast as people want. The minute you start trying too hard or pushing too hard, your system will say, "The heck with you." It's going to go at its own pace. ■

Terry Trotter is a studio musician and teacher in Los Angeles. His trio with Tom Warrington on bass and Joe LaBarbera on drums has recorded six CDs of the music of Stephen Sondheim for Varèse-Sarabande. He has also been Natalie Cole's acoustic pianist for many years.

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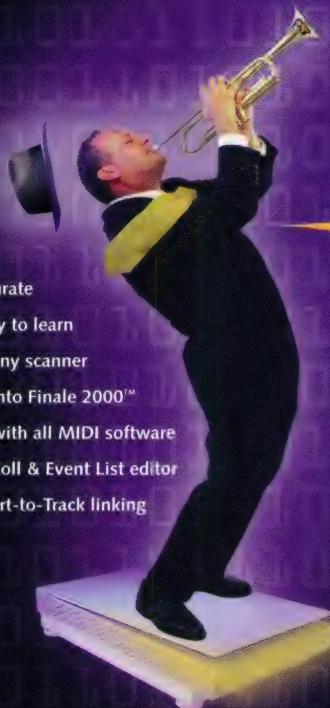
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Resources for Ripping

*Got a question? Need inspiration?
These how-to-play resources deliver the goods*

by Ernie Rideout

If you're interested in learning how to play better piano, organ, keyboard, or synthesizer, just watching a video isn't going to do the trick by itself. The most important thing to do is find a teacher and take lessons regularly. The second most important thing to do is put in the time at the keys yourself, learning the landscape, soaking up the sound, getting the fingers familiar. Third, get yourself out to see and hear live music. Fourth, hang out with musicians, talk to them, and learn from their experience.

Then go home and check out some of these great videos, books, and CDs. It's amazing how much stuff is available these days to help you improvise, to help you understand music theory, and to show you the particulars of a style. Some videos make you feel as though you're leaning over someone's shoulder as they play, giving you an intimate look at one player's style. Others are encyclopedic in their scope, packed with things you'll come back to over and over as your skills develop. A couple of the theory books are of the type that will be in your reference library forever. Others might give you the kick in the pants your musicianship needs, after which you can pass them on to a friend.

For most of the items in the list, we've indicated a general playing level or a range of levels that are appropriate. In our definition, a beginner can be just beginning to play or someone who has some familiarity with the keyboard but who doesn't yet have the skills to play in a band. The intermediate category ranges from a player who can play all major and minor scales and arpeggios and could perform in a group to someone with considerable playing experience but who may have deficiencies in their understanding of harmony or technique. An advanced player has a good deal of performance experience, has a fair amount of technical facility, and can read music well. A hyphen (-) indicates a range of levels; a slash (/) indicates levels of separate volumes.

This list is by no means exhaustive; cruise through the websites in the contact sidebar on page 60 to find even more titles. But the items here do have particular value in our experience. Most are recent publications or releases, but a few are indispensable classics. We hope that whichever of them you choose, you'll find it helpful in your musical journey.

VIDEOS

Andy LaVerne's Guide to Modern Jazz Piano, Vols. 1 and 2, by Andy LaVerne (\$39.95 ea./\$69.95 set, Homespun). Frequent *Keyboard* contributor Andy LaVerne deconstructs standards and his own compositions, revealing his approach to modes,



scales, voicings, substitutions, and arranging. Then he leaves the piano while it keeps playing, so you can see the keys. Liberally sprinkled with great performances, this is a set to refer back to often. INT-ADV.

The Barry Harris Workshop Video, by Barry Harris (\$89.95 for two videos, Bop City Productions). Bebop legend Barry Harris takes you on a detailed tour of his "movable chord" approach to jazz piano. Also covered are his practice philosophy, jazz piano basics, and a lot of personal anecdotes. INT-ADV.

Blues and Rock Techniques for Hammond Organ, by David Bennett Cohen (\$29.95, Homespun). Finally, an organist who shows you everything about the B-3, from how to turn it on to how to make it groove. Simple presentation, easy pace. BEG-INT.



Blues/Rock Piano of Johnnie Johnson, by Johnnie Johnson (\$39.95, Homespun). A conversation and demo with the legend who played on all those Chuck Berry hits. Johnnie shows you many left-hand patterns, licks, and soloing ideas. INT.

The Contemporary Keyboardist, Vols. 1–3, by John Novello (\$39.95 ea./\$99.95 set, Warner Bros.). The videos that accompany John's incredible book of the same name are valuable tools in themselves. Vol. 1 covers the basics of music — notes, rests, scales, etc. Vol. 2 gets you improvising and playing some cool grooves, but emphasizes the theory behind it. Vol. 3 gets into the practical aspects of playing with a band and advanced soloing. BEG-ADV.

Dr. John Teaches New Orleans Piano, Vols. 1 and 2, by Mac Rebennack (\$39.95 ea./\$69.95 set, Homespun). This is the ultimate for fans of New Orleans artists. Mac can play like them all, and he shows you how to do it. Phonky, and available in transcription book/CD format, too. INT-ADV.

Freeing the Caged Bird, by Barbara Lister-Sink (\$39.95, Wingsound). Keyboard playing-related injury prevention is the theme of this well-produced, highly informative video. Anatomy (both yours and the piano's), tension avoidance, and a training program for optimal body position and usage are among the topics. Plus, the clips of Ms. Lister-Sink performing are really impressive. ALL LEVELS.

Jazz Piano Standards, by Andy LaVerne (\$39.95, Homespun). Andy takes you through several jazz standards, shows how to reharmonize them, then shows you how he creates new tunes based on the progressions of the standards. Packed with information. INT-ADV.

Keyboard Improvisation, by George Duke (\$39.99, DCI/Warner Bros.). Okay, this live master class was released more than a few years ago. But

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Resources for Ripping

if George plays it, you ought to know it, and in this entertaining video he gives it up: jazz, R&B, funk, soloing, comping, voicings, substitutions. INT-ADV.

Keyboard Wizardry, by Jordan Rudess (\$30, Medius Vision Network). Sit down with Jordan in his studio, and he'll show you a whole bunch of stuff he knows. Soloing with the blues scale, using pitchbend, ripping synth leads, harmony for songwriting — a cornucopia of tidbits for synth lovers from a synth maniac. BEG-INT.

Learn to Play Gospel Piano, Vols. 1 and 2, by Ethel Caffie-Austin (\$29.95 ea./\$49.95 set, Homespun). Have mercy — this is one great pair of tapes. Ethel can play, and she breaks it all down for you as you look at the keyboard, and goes over it all again in case you were sleeping in church. Reharmonizations, flourishes, deep grooves — this'll get you out of your own pew in a hurry. INT.

Learning Rock 'n' Roll Piano, by Bob Hoban (\$29.95, Homespun). Bob's tape isn't new, but it's still got more rock 'n' roll attitude than any other tape we've seen. Sure, he shows you the chords and styles of Nicky Hopkins and Bill Payne. But he also shows you how to rip. BEG-INT.

Modern Blues for Keyboard, by Alex Glaros (\$49.95, Modern Blues). Home-produced video of down-home playing. Alex shows you a ton of the things that you hear when you catch a live R&B club band with a hot keyboard player. You know, the voicings and licks that make you say, "Hey, what was that cool sound?" BEG-INT.

Rock Keyboards, Step 1 and 2, by David Garfield (\$9.95/\$12.95, Warner Bros.). David "Creatchy" Garfield is one jammin' player, and he

practically invites you to join his band. Fun tunes, cool voicings, serious grooves (more funk and fusion than rock 'n' roll), and an "if I can do it, so can you" approach make playing along with this set a gas. BEG-INT.

You Can Play Jazz Piano, Vols. 1–3, by Warren Berhardt (\$39.95 ea./\$99.95 set, Homespun). This master jazz player takes you from the beginning — chords, scales, the blues — up through serious blowing over tunes. Densely packed, yet comprehensible, this classic set is still a great resource. Also in book/CD format with full transcriptions. BEG/INT/ADV.

CD-ROMs

Dick Hyman's Century of Jazz Piano, by Dick Hyman (Mac, Win; \$99 pro/\$49 home, JSS Music). This two-disc set is packed with Dick's great playing in both audio and MIDI formats. The latter lets you scroll, slow down, or step through Dick's performances. Plenty of video footage of the artists and of Dick showing techniques. Deep and fun. No external devices required, but you can run the MIDI through your favorite piano module if you like. ALL LEVELS.

Glenn Gould Plays Bach (Mac, Win; \$24.95, iSong/Hal Leonard). Play along with Glenn Gould? You bet, and make him stop, go back, slow down, and do it all over if you like. Six pieces, taken from the *English Suite No. 1*, the *French Suite No. 2*, the *Two-Part Inventions*, and the *Goldberg Variations*, all with scrolling notation and an onscreen keyboard. INT.



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Oscar Peterson, *Note for Note*, by Oscar Peterson (Win; \$79.95, P.G. Music). Oscar fans, prepare yourself for overstimulation. Eighteen of Oscar's greatest performances, presented in audio, MIDI, and notation. Scroll 'em, loop 'em, slow 'em down. Listen to Oscar reminisce, read his autobiography onscreen, look at pictures of him and his great jazz pals. Enjoyment: ALL LEVELS. Playing: ADV.

BOOKS AND BOOK/DISC PACKAGES

101 Montunos, by Rebeca Mauleón-Santana (\$28, Sher Music). Includes two CDs. Thorough, historical, and fun. The best Afro-Cuban keyboard book ever. INT-ADV.

A. D. G. Productions (\$24.95 ea. w/MIDI files). A bunch of great MIDI file riff/book combos. Among the best: **100 Ultimate Blues Riffs, Salsa and Afro-Cuban Montunos for Piano** (by Carlos Campos), **Gospel Riffs That God Would Love To Hear**, **100 Ultimate Jazz Riffs**, **60 of the Funkiest Keyboard Riffs Known to Mankind**. INT.

Blues By You, by Joel Simpson (\$18.95, Cherry Lane/Hal Leonard). Includes CD. A slim, fun introduction to blues piano. BEG-INT.

The Contemporary Keyboardist, by John Novello (\$49.95, Warner Bros.). A remarkably comprehensive and musical tome. Packed with interviews and information applicable to all styles. BEG-ADV.

The Don Grolnick Collection, by Don Grolnick (\$17.95, Hal Leonard). Don's greatest jazz tunes. And they are great indeed. ADV.

Edly Paints the Ivories Blue, by Ed Roseman (\$12, Musical EdVentures). A beautifully-illustrated, humorous introduction to blues piano. BEG.

Funk Keyboards, by Gail Johnson (\$14.95, Hal Leonard). Includes CD. "Dial up a Rhodes patch, and let's go," says Gail. And off you go on this awesome groove-packed set. INT.

Harmonic Exercises for Piano, by Clare Fischer (\$9.95, Advance Music/Sher Music). A few pages of beautiful finger exercises that stretch your ears. No theory to read; just play, listen, and grow. INT-ADV.

Harmony, by Walter Piston (\$50, Norton. Available from www.amazon.com). Hundreds of books are available on classical music theory. Many are excellent. This is the granddaddy of them all. BEG-ADV.

How to Practice Jazz, by Jerry Coker (\$7.95, Jamey Aebersold Jazz). A thoughtful, and essential, guide for the serious student of jazz. No music, just classic advice. BEG-ADV.

Improvising Blues Piano, by Tim Richards (\$35, Schott. Available through www.amazon.com). Includes CD. Covers all kinds of blues from simple I-IV-V to boogie woogie, rock 'n' roll, swing, New Orleans, and R&B. Very well done, and a blast to play. BEG-ADV.

In Session with the Dave Weckl Band, by Jay Oliver (\$24.95, Player's Circle). Contains the actual keyboard charts from *Rhythm of the Soul*, a recent release by the Dave Weckl Band. Includes to-the-point commentary and a "minus-keyboards" CD. INT-ADV.

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The Jazz Piano Book, by Mark Levine (\$28, Sher Music). One of the best jazz piano methods ever. Very thorough and thoughtful, packed with useful information on very musical topics. INT-ADV.

The Jazz Theory Book, by Mark Levine (\$38, Sher Music). A highly musical and practical approach to jazz theory and skill application. An excellent resource. INT-ADV.

The Jazzmaster Cookbook, by Jim Grantham (\$40; cassettes \$12.95 ea. key, Nightbird Music). A unique approach to jazz ear training and improvisation. Very effective. BEG-ADV.

Joey DeFrancesco's Concepts for Improvisation, by Brad Townsend (\$19.95, Hal Leonard). Includes CD. Joey's jazz B-3 tricks and tools, laid out like a picnic. Lots of blowing and bass lines transcribed. INT-ADV.

A Modern Method for Keyboard, Vols. 1-3, by James Progris (\$14.95 ea., Berklee Press). Just re-released and updated, this classic set has helped generations of Berklee graduates get around on the keys.

The Pop Piano Book, by Mark Harrison (\$39.95/MIDI or cassette, \$29.95; Harrison Music Systems). One of the best how-to-play books ever. Covers rock, R&B, country, new age, and funk. BEG-ADV.

Ready, Aim, Improvise! by Hal Crook (\$49.95, Advance Music/Sher Music). Includes two CDs. Holy cow — this man's a jazz maniac, and he's written an intense, info-packed method for all instruments. It'll make you laugh, and it'll show you how to really blow. INT-ADV.

Super Sight-Reading Secrets, by Howard Richman (\$9.95, Sound Feelings). Best money you'll ever spend. You buy CDs by players

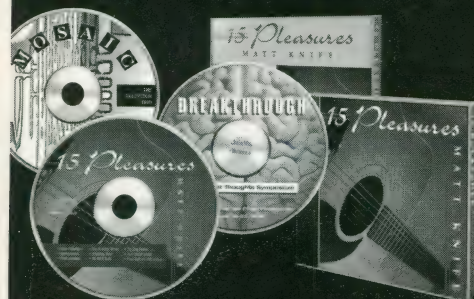
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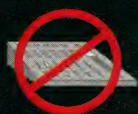
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Supreme Beings Of Leisure

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udging from their band name, you might think the members of Supreme Beings Of Leisure live a kicked-back life, free of the everyday cares and woes of hardworking musicians. But in fact, they're hardcore hi-tech musicmakers who know what it's like to log countless hours with a Pro Tools and MIDI rig. Their well-crafted self-titled debut release oozes with elements of trip-hop, drum 'n' bass, ambient, techno, and house, blended with ethnic timbres, string orchestra, and seductive vocals. What impressed me most about Supreme Beings of Leisure is their ability to marry sophisticated programming with singer Geri Soriano-Lightwood's layered vocals, resulting in a record that's filled with ear candy, yet completely listenable from start to finish.

SBL came together by chance four years ago when Oversoul 7 members Rick Torres (guitar), Kiran Shahani (bass), and Ramin Sakurai (keyboards) invited Soriano-Lightwood to try her hand at writing and singing over some of their tracks. It wasn't long before Oversoul 7 was reborn as Supreme Beings Of Leisure.

Since then, the band has gone through the proverbial record-biz wringer — being signed to one record label, moving to another, and finally ending up at Palm Pictures. So why did it take so long to get their music out? "It took a long time to find a producer," says Shahani, "because everyone we wanted to work with was already working on other projects, and we were on this last-minute schedule. Our goal was to learn from our producer, so we intentionally picked a few different producers who we

thought would teach us a lot. Tom Rothrock, for instance. We were really interested in him because he did the first Beck album, and he did the Foo Fighters, Elliot Smith . . . he had a good track record."

"We learned a lot," says Sakurai of the sessions. "The process of making this record seemed innovative to us. We had three Pro Tools systems running simultaneously, and it got to the point where the live room was used as a Pro Tools suite. We were a machine. We'd come in, lay down a dummy track on the [2" analog] slave reel, Geri would then lay her vocals, then we'd take those and put them into Pro Tools while we dumped programmed synth tracks onto the master tapes. Meanwhile, Kiran would maybe lay down bass or Rick would record his guitar tracks. Those would be put into another Pro Tools system. Then somebody would edit the vocals on one station, the guitars would be edited on another, and the bass parts might be edited on a PowerBook."

With SBL barely in the can, the band has already rethought their record-making approach for the next release. "Now that we look back at the whole process, putting everything to tape was a big mistake," Sakurai says. "We needed to recall certain mixes, so we had to go back into the studio for the 2" machines when we could have done it at our own houses if everything was in Pro Tools. The next record will definitely be done mostly at home. When we're ready, we'll transfer everything to a studio and mix there." JOHN KROGH



For a complete list of gear used on Supreme Beings Of Leisure's debut release, visit www.keyboardonline.com.

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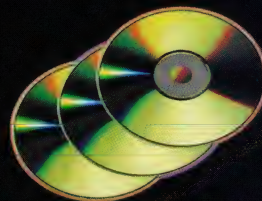


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RECORD theory

Phase Cancellation

by Jim Aikin

Any time you set up two or more microphones to record the same sound source, you run the risk of phase cancellation. For some practical tips on how to avoid phase problems in miking, turn to "Record: Mic" on page 68. Phase cancellation occurs when a signal is mixed with a time-delayed version of itself. This principle is used in the garden-variety flanger effect, so let's be clear: Phase cancellation isn't *always* a bad thing.

Unless you're using it to enhance a track, though, phase cancellation spells trouble. This particular gremlin can make almost any instrument sound thin, harsh, or hollow. The question for today is, what is phase, anyway? And what happens when it gets cancelled?

SINE O' THE TIMES

You've probably heard of sine waves. A sine wave (see Figure 1) is a mathematical abstraction generated by a trigonometric function. But don't worry; we're not going to get into trigonometry. The only reason I'm bringing it up is because the terms we use to describe phase come from trigonometry.

Trig, as you might recall from high school, involves the study of angles. Angles are measured in degrees of arc. A complete circle contains 360 degrees. A right angle, being 1/4 of a circle, contains 90 degrees.

The phase of a sine wave is also measured in degrees. A full cycle of the wave measures 360 degrees, and a half-cycle measures 180 degrees. The word "phase," to be technical, refers to the point to which the wave has advanced at a given moment in time — as in, "It's just a phase I'm going through."

When two sine waves have the same phase at a given point in time, we say they're "in phase." When one sine wave is at a different point in its waveform from the other, we say they're "out of phase." If they're as far out of phase as they can get, with one wave going up while the other goes down, they're described as being 180 degrees out of phase. This relationship is shown in Figure 2.

MIX & MATCH

Mixing, in the audio world, is the process of adding waves together. When it comes to addition, that innocuous-looking horizontal line that runs along the middle of the waveform, as in Figures 1 and 2, is crucial. That line is zero. The

part of the wave above the line is positive, and the part below the line is negative.

This part doesn't even come close to trig. It's pre-algebra. When you add two positive numbers, you get a bigger number. When you add two negative numbers, you get a bigger negative number. But when you add a positive number and a negative one, you get a smaller number than you started with. If the positive number and the negative one are the same size, when you add them you get zero:

$$+5 + -5 = 0$$

That simple equation tells you most of what you need to know about phase cancellation. If two sine waves are 180 degrees out of phase, and if they have the same amplitude (loudness) at that moment, then when you mix them together you'll get silence. If they also

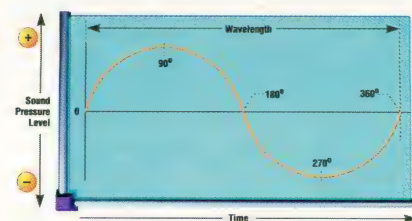


Fig. 1. An audio sine wave. The graph measures air pressure on the vertical axis and time on the horizontal axis. Assuming the wave is travelling through space, the horizontal axis also shows the wavelength.

have the same frequency, they're going to stay out of phase, in which case you're going to keep on hearing silence.

Well, that's all very nice, but a sine wave is a mathematical abstraction. In the real world, the only way to get even a close approximation of a sine wave is with an electronic oscillator. But phase cancellation can become a factor no matter what type of real-world sound you're recording. Here's why:

A PARTIAL EXPLANATION

In the early 19th Century, a French mathematician named Jean-Baptiste-Joseph Fourier developed a theory that allows any repeating wave to be analyzed as a set of sine waves at different frequencies and with different amplitudes.

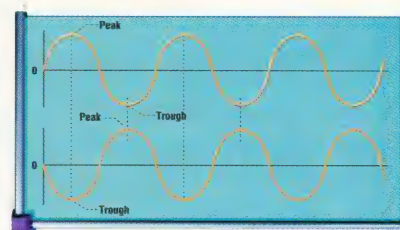


Fig. 2. When two sine waves of the same frequency are 180 degrees out of phase, the peaks in one wave line up with the troughs in the other. If these two waves are added (mixed), the result will be silence.

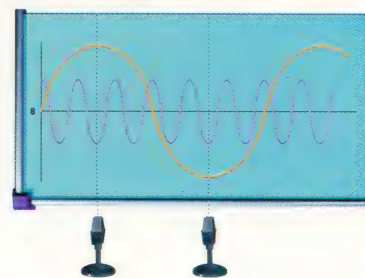


Fig. 3. When two mics are at different distances from a sound source, some of the partials will be in phase when the signals from the two mics are mixed, while other partials will be out of phase. Here, the low-frequency (long-wavelength) partial is out of phase with respect to mic position, resulting in phase cancellation, while the high-frequency (short-wavelength) partial is in phase.

In other words, we can think of any sound as being made up of a bunch of sine waves.

Fourier analysis has huge practical applications in audio engineering. For instance, when an engineer EQs a signal by boosting it at 3kHz, what's actually happening is that within a very complex waveform (created by a violin section, perhaps), only the sine waves whose frequency happens to be in the 3kHz range are being increased in amplitude. The sine waves in the rest of the signal — and remember, they're all mixed together — are being left alone. The fact that we can even *do* that with an electronic circuit is pretty amazing, when you think about it.

The sine waves in a complex tone are called *partials*. Ordinary acoustic sounds typically have dozens of partials, some louder than others, and each partial has a different frequency.

AIR HOCKEY

Now let's talk about wavelength. Since sounds travel through the air at a finite speed, the peaks and troughs of any waveform are separated from one another by some physical distance. If the sound has a high frequency, the peaks and troughs are close together — or, to put it

another way, the sound has a short wavelength. Conversely, if the sound has a low frequency, it has a long wavelength. (A math whiz would say the wavelength and frequency have an *inverse* relationship: Each depends on the other, and as one gets larger the other gets smaller.)

So you smack a Chinese gong, and the sound of the gong, which contains dozens of sine-wave partials, travels outward through the air. You set up a couple of microphones, because you think it might be neat to record the gong in stereo. One of the mics is, let's say, six feet from the gong, while the other mic is only four feet from the gong. We'll ignore the fact that the gong itself is four feet across, making the true gong-to-mic distance a much more complex entity. For the purposes of our example, it's enough to say that one mic is two feet further from the gong than the other mic.

If one of the partials in the sound happens to have a wavelength of 1-1/2 feet, or three feet, the peaks in this partial's waveform will arrive at the first mic at the same moment when the troughs in the wave are arriving at the other mic (see Figure 3). When you add (mix) the signals from the two mics, this partial will be cancelled out. That's phase cancellation. It will happen with

every partial in the sound whose wavelengths are out of phase with respect to a pair of mics.

Because the acoustical behavior of a gong in a real room is quite complex, out-of-phase partials most likely won't drop out completely, but their level will be drastically reduced. Conversely, if a partial has a wavelength that's an even multiple of the distance between the mics, the partial will be in phase with respect to the two mics. When their signals are mixed, this partial will be boosted in level.

Since acoustic sounds typically contain a lot of partials, whenever you use two mics some of the partials are likely to be in phase with respect to the two mic positions, while others will be more or less out of phase. Certain frequencies will be boosted, while others will be cut. In effect, by using two mics you've applied a *comb filter* to the sound. (A comb filter is a filter with a number of closely spaced peaks and dips in its response curve. The response curve looks faintly like the teeth of a comb, hence the name.) ■

Senior editor Jim Aikin is going through yet another phase.

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Preventing Phase Problems

by Mitch Gallagher

Whether you're capturing audio with your sampler, recording a drum kit, or providing sound reinforcement for a full orchestra, any time you have more than one microphone open, you run the risk of encountering phase problems. Let's take a look at what we can do to minimize out-of-phase signals.

PHASED OUT

Phase problems arise when multiple versions of a signal are combined together. One example of this is when more than one mic is placed close to a sound source. If the mics are placed at different distances from the sound source, it will take longer for the sound to reach one than to reach the other. This difference in time means that the phases of the various overtones within the wave when they arrive at each mic will likely be different. (For more on phase, see page 66.) If the signal from those mics is later

combined — say, during mixdown — then the two out-of-phase signals won't play nice; they'll cancel or strengthen each other in various ways, depending on their relative volumes, how far they're out of phase, and on their harmonic content (see Figure 1).

Minimizing phase problems in a situation where many microphones are being used at once can be challenging. Consider what happens when you mic up a drum kit: You might have a close mic on the kick, one each on the snare and hi-hat, one on each of the toms, and

a stereo pair of overhead mics. For best results, you have to evaluate the phase relationship of each possible pair of mics. This can be a complex proposition; not only is it important to make sure that the snare and hi-hat mics aren't phasing, but also that the snare sound leaking into the hi-hat and overhead mics isn't causing phase problems.

REDUCING PHASE PROBLEMS

It's tough to fix phase problems once you've laid a track down, so make it a habit to check for phasing *before* you push the Record button. To check for out-of-phase signals, put your ear and your mixer's solo buttons to work. Listen to each channel individually, then listen to various combinations of channels. Are the individual signals fatter and punchier than the combined channels? Do the combined channels sound thinner, harsher, hollower, or quieter than the individual channels? If so, you have phase problems. Here are some rules of thumb you can follow to minimize them:

1. Use the fewest possible mics. The more mics you have open at once, the more likely you are to have phase problems among them.
2. Follow the 3:1 Rule (see sidebar "The 3:1 Rule"). By carefully controlling the distances between mics you can greatly reduce phase difficulties.
3. Put your mics' polar pattern to work. One of the main causes of phase problems is when two mics are placed on different sound sources and audio "leaks" from one to the other. Use your mics' sound rejection abilities to minimize this. (See Studio Sense, March '99, for more on mics and polar patterns.)
4. Put the Inverse Square Law to work: Each time you double the distance to a sound source, its volume drops by 6dB. This can be a great help in controlling unwanted leakage into mics.
5. Move the mics. The best way to solve phase problems is to reposition the mics. Sometimes the tiniest shift will be enough to bring problem harmonics into line.

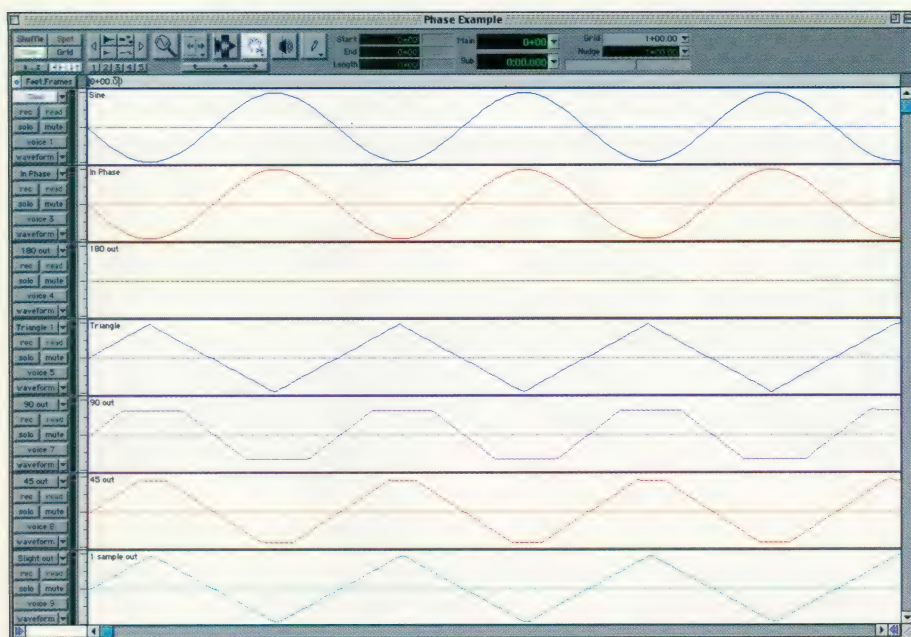


Fig.1. Out-of-phase waves will cancel each other partially (sometimes even completely) when summed. Here we see tracks containing waveforms resulting from signals combined in various phase relationships. The top track contains a 1kHz sine wave. The second track is the result when the top track is combined with itself in phase — it's a perfect duplicate of the original; the only difference is that it's louder because the two signals reinforce each other. (In the example above, the track was turned down to prevent possible clipping.) The third track shows what happens when two sine waves are combined 180° out of phase: complete cancellation.

Track 4 contains a 1kHz triangle wave. In track 5, it's been combined with itself 90° out of phase. It hasn't been clipped; the "flat top" appearance results from harmonics canceling each other. Similarly, track 6 results from two triangle waves combined 45° out of phase; note the asymmetrical shape at the tops of the waveform peaks. Finally, we see the results of two triangle waves combined one sample (at a 44.1kHz sample rate) out of phase. The signal still closely resembles a triangle wave, although the peaks of the waveform have been very slightly rounded, indicating some harmonic cancellation.

What about the phase switch on your mixer? In truth, calling it a "phase" switch is a misnomer — that switch doesn't affect the phase of the signal at all. What it does is invert the *polarity* of the waveform; positive becomes negative, and vice-versa. The effect of this is the same as putting a waveform 180° out of phase. If two signals are way out

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of phase, flipping the switch may help, but in general it's better to fix things by other methods, if possible.

PHASORS ON STUN

Combining two out-of-phase signals is a less-than-wonderful experience; get ready for thin, strident, hollow sounds. Combining two signals that are in phase, on the other hand, is a

beautiful thing. With a little care and effort your signals can be in phase every time — your audio will love you for it! ■

Mitch Gallagher has just relocated to New York City to assume the editor chair at EQ magazine. He's also the editor of Make Music Now! and Keyboard's consulting technical editor. He abhors free time. . .

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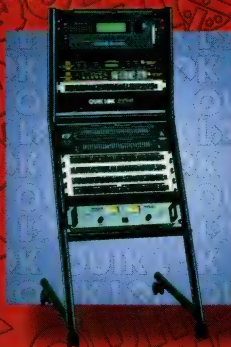
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The 3:1 Rule

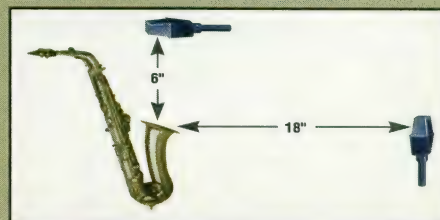
I attended a Christmas concert recently that featured a 70-piece orchestra and a large, approximately 200-voice choir. The concert was in a large outdoor amphitheater, and amplification was used to increase the audio volume and dispersion. As the concert began I noticed that the string section (among other things) was out of phase. The resulting sound was a chorusy wash that lacked definition and that had a synthetic quality. Looking closely at the setup, I observed that almost every instrument in the orchestra was individually miked, for a total of over 60 microphones onstage. This is a perfect example of the venerable 3:1 Rule and what happens should you choose not to follow it. The overuse and/or misplacement of microphones in this scenario resulted in poor sound quality that likely could have been averted had the 3:1 Rule been observed.

What Is It?

The 3:1 Rule should be considered whenever more than one microphone is used simultaneously. It's equally important in both sound reinforcement and recording situations. The 3:1 Rule states that if you place a microphone near a sound source, then all other microphones being used at the same time must be placed at least three times further away from the sound source than the distance between the original microphone and the sound source (see figure below). For example, if you place a microphone 6" from a clarinet, then all other microphones should be at least 18" from that clarinet.

An important consideration is the possibility of minimizing the distance between the primary (closest) mic and the sound source. If you place a microphone 3" from a snare drum, then according to the 3:1 Rule you should avoid placing any other mics within 9" of the snare drum, which may be a problem with a hi-hat mic. However, if the snare drum mic is positioned 1" from the snare drum then the hi-hat microphone won't likely violate the 3:1 Rule.

Coincident stereo miking techniques, where the diaphragms of two microphones are placed as close together as possible, are exempt from the 3:1 Rule, as sound reaches both microphones at the same time. Also, stereo miking techniques usually require the two microphones to be panned hard left and hard right, so there's generally less audible phase cancellation. **ROB McGAUGHEY**



If a microphone is placed 6" from a sound source, the 3:1 Rule states that no other microphones should be placed within 18" of that sound source.

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Press comments

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(SOUNDCHECK 4/98)



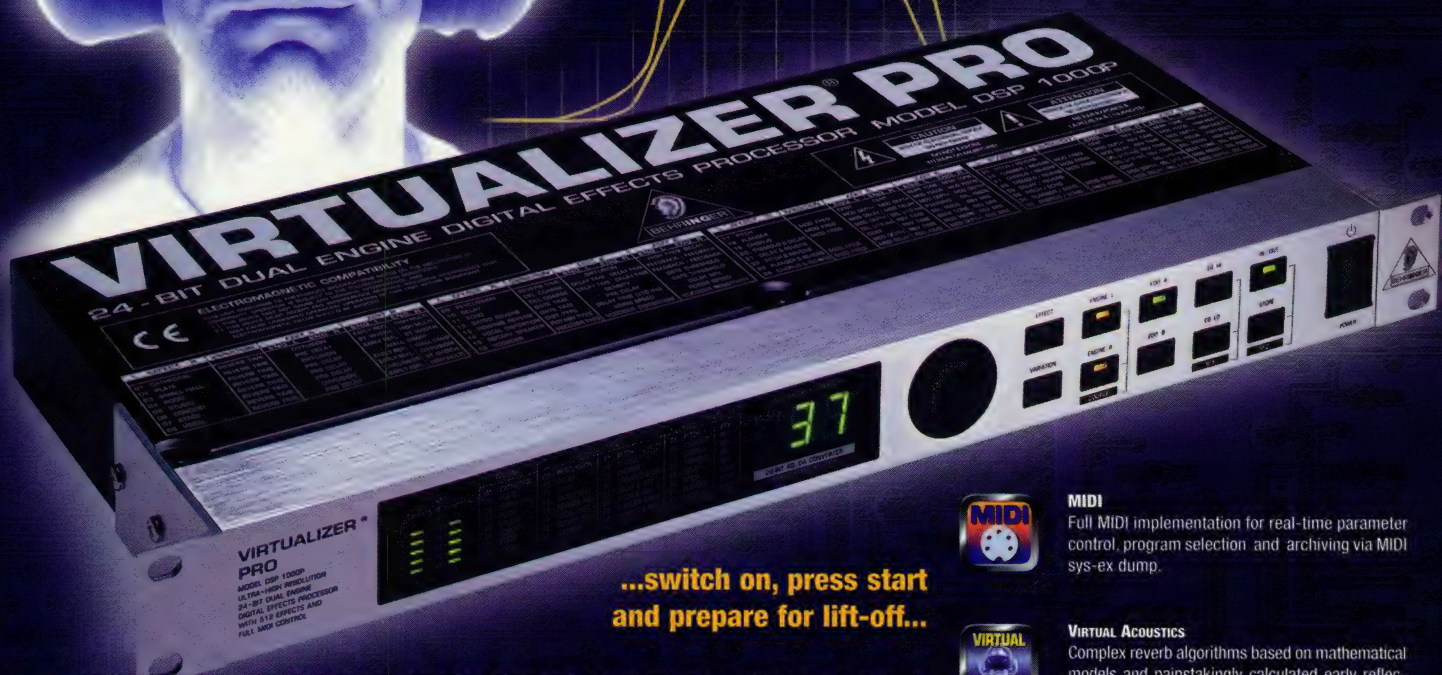
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- 72** E-mu E5000 Ultra
- 76** E-mu ESI 2000
- 86** Microcon & Cyclodon
- 90** Mutronics Mutator
- 94** Buchla Marimba Lumina
- 100** SeaSound Solo
- 104** Digidesign Bruno/Reso
- 110** Short Takes
 - Electrix Mo-FX
 - Apple iBook
 - Audio-Technica AT849
- 114** Sounds

The Bottom Line

Get vital information without having to read volumes of text! Keyboard Reports no longer have a "Conclusions" paragraph, because they don't necessarily have to be read from start to finish. A concise summary of a product's strengths and weaknesses can be found at the top of each review. For more detail, just find the clearly labeled sections that interest you.



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E-mu E5000 Ultra

DIGITAL SAMPLER WITH 48-TRACK SEQUENCER

by John Krogh

Stereo sampler with 64-note polyphony and built-in 24-bit effects.

Pros: Powerful sampling/synthesis capabilities at an affordable price. Excellent rhythm loop editing. Performs offline DSP and disk loads quickly. Expandable.

Cons: Comes with only 4MB sample RAM. No printed manuals (only computer-readable PDF files). Can't load AIFF or WAV files from SCSI.

Bottom Line: Compared to other sub-\$2,000 samplers, the E5000 scores quite high. While it doesn't come standard with a lot of options that pro samplers need, it can be expanded almost to the E4XT Ultra level. Combine this compatibility with the massive sound library available for Emulator samplers, and the E5000 looks even better. That said, it's missing a couple of features I've come to rely on in my other samplers, most notably the ability to sample direct-to-disk and to modulate effects parameters in real time.

E-mu Systems, 831-438-1921, www.emu.com

\$1,695

In the category of professional samplers, the phrase "budget-oriented" implies limitations and cutbacks. Sure, you can get a lot out of the current crop of inexpensive bang-for-the-buck synth modules. But in the sampling arena, you still have to pay upwards of \$2,500 to get a machine that's going to give you the features, flexibility, and expansion capabilities to grow with your studio. That is until now. At \$1,695, the E5000 Ultra sampler is E-mu's lowest-priced Emulator yet, but it's every bit as powerful as the company's top of the line E4XT Ultra, which costs \$3,595 — more than twice the asking price of the E5000 (hereafter referred to as the E5K).

"How can this be," you ask? A few corners have been cut, of course. No, you don't get fewer knobs or buttons. In fact, the E5K is essentially a stripped-down version of the E4XT Ultra. They both use the same 32-bit RISC processor and EOS (Emulator Operating System, currently at version 4.01), so on the software/DSP side, there's no difference at all. On the hardware side, the E5K lacks most of its bigger brother's high-end features — word clock I/O, internal hard drive, AES/EBU digital I/O, and a second set of MIDI connections for 32-channel operation. All these features are available as options for the E5K, though, so you can pick and choose add-ons for the kind of work you do.



Compared to its Ultra siblings, the E5K's only real "limitations" are that it can't be expanded from 64 to 128 voices the way other Emulator models can, and its four analog outputs are expandable to 12. All other Ultras come standard with eight analog outs, expandable to 16.

E-mu's Ultra series includes the aforementioned models, plus the E-Synth and E6400 Ultras. (See "Past Emulator Coverage" on page 84 for pointers to our reviews of those units. For a rundown of features and options currently available in the E-mu Ultra series, check out the Emulator 4 Ultra Comparison Chart on page 74.) Since then, the only enhancements to the Emulator line have been by way of a new operating system and a RISC processor, which is faster than the processor used in the original E4 family. When senior technical editor Mitch Gallagher reviewed the E-Synth in July '98, EOS was at version 3.2. For my review, I'll be focusing on the new enhancements of version 4.01.

Overview The E5K has all the offline DSP you'd expect from a pro machine, plus a healthy set of synthesis programming capabilities. You can program up to 256 multi-sampled layers, or voices in E-mu speak, per preset (of which up to 128 can sound at any given time) with velocity and positional switching or crossfading. Each voice can have up to three 6-stage envelopes, two LFOs, and tons of modulation sources and destinations. Twenty-one filter types are available, including all the usual resonant suspects — low, high, and bandpass variations, phaser, and flanger — plus E-mu's proprietary Z-plane morphing filters, which first appeared in their Morpheus synth module.

Vital Stats

OS version reviewed	EOS 4.01
Polyphony	64 voices
Supported sample formats	via SCSI: Emax II, Roland S-760, and Akai S1000/1100/S3000; via floppy disk: AIFF and WAV
Sample memory	4MB RAM standard, expandable to 128MB RAM via 72-pin 64MB SIMMs with 70ns response time
Supported sample rates	22.05kHz, 24kHz, 44.1kHz, and 48kHz
Resolution	16; downscalable to 0 with bit-convert DSP
Sample editing	loop, truncate, cut/copy/paste, taper, sample calculator, reverse, stereo to mono, left to right, DC filter, sample integrity, sample-rate convert, digital tuning, compress, parametric EQ, time-compress, pitch change, transform multiply, doppler/pan, sonic enhancer, Beat Munger
Loop types	2
Filters	21 types including low-, band-, and highpass, swept EQ, phaser, flanger, vocal, distorted, parametric, and Z-plane; 2-, 4-, and 6-pole rolloff slopes; variable resonance
LFOs	2 per voice, syncable to MIDI clock
LFO waveforms	17: random, triangle, sine (4 variations), sawtooth, square, pulse (4 variations), pattern (4 variations), "hemiquaver"
Envelopes	(three) 6-stage envelopes (AADRR) per voice: amplitude, filter, and auxiliary
Effects	(two) 24-bit programmable effects processors
Analog outputs	rear panel: 4 balanced 1/4" jacks; front panel: 1/4" headphone jack
Analog inputs	stereo, unbalanced 1/4" jacks
Digital audio I/O	none
Word clock I/O	none
MIDI I/O	in, out, thru
SCSI I/O	one 50-pin
Sequencer	48-track, 480 ppq
Dimensions/weight	17.125" W x 13.25" D x 5.25" H (3U); 17.75 lbs.
Options	SCSI/IDE mounting kit, \$30; ADAT I/O, \$549; DWAM (digital audio I/O/word clock/ASCII/dual MIDI connections), \$395; Orbit/Planet Phatt and E-Synth sound ROMs, \$295 ea.; flash ROM, \$319; analog out expansion, \$795; SCSI port, \$59.95



Fig. 1. Meet the Beat Munger, an E-mu rhythm loop editing feature that lets you de/reconstruct drum loops. The X's along the bottom represent eighth-note subdivisions of a loop. You can turn these on and off to create new rhythms comprising the subdivisions. When a portion of a loop is turned off, Beat Munger joins the surrounding regions, allowing you to transform a 4/4 drum loop into 7/8, for instance. Notice the Swing percentage value. This lets you add or remove swing feel to/from a drum loop by changing the percentage to a positive or negative value, respectively. What's even cooler is that all of these operations can be done in real time.



Samples can be recorded via the analog inputs at fixed rates: 22.05kHz, 24kHz, 44.1kHz, or 48kHz. Alternatively, the E5K's stereo audio output can be resampled in the digital domain. Automated features like auto-normalize, loop, and truncate help reduce the amount of work you have to do to create a playable sample. The E5K can even place consecutively recorded samples across the keyboard automatically — a nice touch, though you can't record, say, a complete track from a drum loop construction

kit and have the sampler chop each phrase and hit into individual samples by itself as you can with the Yamaha A3000.

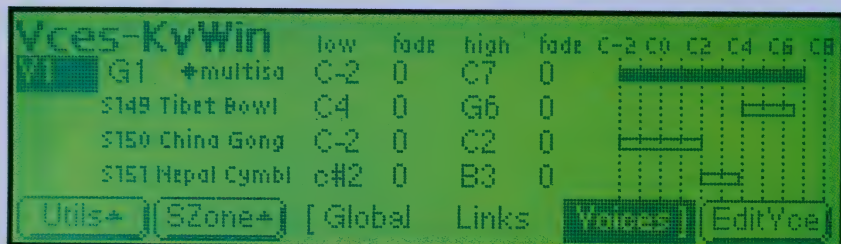
Other standard features include a 48-track MIDI sequencer and two built-in 24-bit stereo effects processors, which "are functional, if not stellar" to quote Mitch's previous review. You won't find any special electronica/DJ, tube-emulation, or dynamics processing (e.g. compression) effects here, just choruses, reverbs, and delays. One complaint from Mitch's review

E5000 Organization

The E5K's operations are distributed among six modules — Sample Manage, Sample Edit, Preset Manage, Preset Edit, Master, and Disk. The two “manage” modules address higher level operations such as creating, naming, placing, and deleting samples and presets. “Edit” modules address low-level functions — *e.g.*, looping and digital signal processing (DSP) for samples, and velocity switching, keyboard sample mapping, MIDI controller routing, and assigning effects for presets.

Sounds are produced by arranging samples, voices, and presets. A sample is the basic sound building block, which comprises sample rate and looping information. Voices map one or more samples across the keyboard, complete with velocity settings, filtering, envelope, and modulation assignments. Voices aren't what you dial up and play from your MIDI keyboard, though. Rather, voices are organized into a preset, which is a complete keyboard layout that contains one or more voices, plus a number of performance parameters such as effect settings.

Take a look at the key mapping window below. V1 is highlighted, indicating that I'm working with voice one, which contains a multisample that includes Tibet bowl, China gong, and Nepal cymbal samples. The horizontal bars show where each sample is mapped on the keyboard.



that still hasn't been addressed: There's no way to control effects parameters via MIDI in real time. This is a serious omission, and puts E-mu well behind the curve technologically when the E5K's effects are compared to those of other samplers and synths. (Just before presstime, we learned E-mu will shortly be announcing a

new effects board for the Ultra sampler family.)

The 48-track MIDI sequencer, which is also found in the E-Synth, is more of a player's tool than a programmer's workhorse. It's functional, but not what I'd call user-friendly. For instance, there's no step input, no adjustable (strength percentage) quantization, and no

event-level editing that would allow you to, say, insert a program change. On the plus side, you can apply swing quantization and scale velocity data over a range of time (but not a range of notes). Furthermore, the sequencer can play Standard MIDI Files (format 0 and 1), and up to seven songs can be played in series using the jukebox function. One minor gripe: There's no built-in metronome sound for count-off — you have to assign a preset, such as a drum kit, and assign a “click” note.

Eye on EOS As I mentioned earlier, EOS is up to version 4.01 as of this writing. What's been added since we took a look at it back in July '98? For starters, the ability to read Akai S3000-format sounds. This is a welcome addition to the Emulator's supported library formats: Emax II, Roland S-760, and Akai S1000/1100. Two new DSP tools, bit convert and phase linear filter, have been added to the destructive sample editing functions. Bit convert lets you downsize a sample's bit-rate all the way to zero if you like; however, a more practical use would be to make your samples sound grungy and lo-fi.

You also get six more software “patch cords” per voice for routing modulation sources to destinations, as well as 13 new LFO waveforms. Perhaps the most significant new feature, though, is the Beat Munger (See Figure 1 on page 73. For more on E-mu's Beat Munger, refer to our November '99 Hot Tips article.)

Beat Munger can chop up a rhythmic loop into its eighth-note components, letting you switch each slice on or off to create new loops. Unlike Propellerheads' ReCycle, which divides rhythmic samples based on attack transients, Beat Munger analyzes the waveform of a sample to figure out the tempo. Once it's done this, it lets you reconstruct a groove in a number of ways. You can change the loop's tempo and even its feel, all in real time. During my sessions with the E5K,

Emulator 4 Ultra Comparison Chart

MODEL	E4XT Ultra	E-Synth Ultra	E6400 Ultra	E5000 Ultra
Polyphony	128	64; expandable to 128	64; expandable to 128	64
RAM	64MB standard; 128MB max.	16MB standard; 128MB max.	16MB standard; 128 max.	4MB standard; 128 max.
Internal hard drive	3.2GB IDE standard	none; optional SCSI or IDE	none; optional SCSI or IDE	none; optional SCSI or IDE
Dual MIDI	yes; 32 channels	yes; 32 channels	dual MIDI port optional	dual MIDI port optional
Balanced analog outs	8; expandable to 16	8; expandable to 16	8; expandable to 16	4; expandable to 12
Word clock & AES/EBU I/O	standard	standard	option	option
CD-ROMs included w/ unit	9	9	9	1
16 out/8 in ADAT digital I/O	option	option	option	option
2nd SCSI port	option	option	option	option
16MB sound ROM	option	standard	option	option
Orbit/Phatt Sessions 16MB sound ROM	option	option	option	option
16MB Flash ROM	option	option	option	option

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RMX 1450	280	450	700	1400	\$649
RMX 2450	500	750	1200	2400	\$899

1 kHz, 0.1% THD 11 kHz, 1% THD

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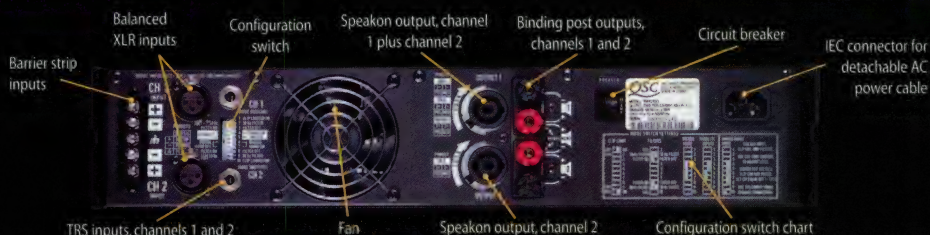
- Independent defeatable clip limiters reduce distortion without sacrificing peak performance.

- Selectable low-frequency filters boost system response, protect speakers and ensure low-end tightness by more precisely matching the amplifier's range to the loudspeakers.
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Beat Munger consistently nailed the tempo of my loops, and did an outstanding job of changing the tempo of stereo loops without introducing flaming (double-strikes).

What's to like...

Rather than take the time to go over what's already been said about the Emulator family in

Keyboard's previous coverage (see "Past Emulator Coverage" on page 84), I've decided to highlight the cool and not-so-cool aspects of the E5K. Starting with the plusses:

■ **Excellent DSP/Sound Quality.** E-mu's samplers have a reputation for sounding great, and the E5K lives up to the legacy. In my opinion, having just finished a review of the Akai S6000, and being an owner of a Yamaha A3000, I'd have to say the E5K is a bit more

warm-sounding than the other two. In fact, I sampled some vocals that I originally recorded into Pro Tools so I could use the E5K's Aural Exciter DSP. After A/B'ing the sampler and Pro Tools versions, I actually preferred the sound of the E5K, and that was before I applied any DSP.

■ **Outputs as inputs.** This isn't new to the Ultra line, but it's still a very cool thing. The (optional) auxiliary audio outs can be used as

Continued on page 80

E-mu ESI 2000 DIGITAL RACKMOUNT SAMPLER

Stereo sampler with optional effects and digital I/O.

Pros: Straightforward operation. Exceptional DSP facilities. Potent synthesis capabilities. SCSI comes standard. Loads of presets included.

Cons: No graphic waveform display. No sync to MIDI clock. Some DSP operations take a long time.

Bottom Line: True to the adage "as technology improves, prices will fall," the ESI 2000 sports all of the capabilities and then some of E-mu's ESI-32 (reviewed Aug. '95), which cost \$1,495 and had half the polyphony, half the basic sampling RAM, 32MB maximum RAM, and optional SCSI at an added cost. Like the ESI-32, the ESI 2000 lacks graphic waveform editing, and some of its DSP operations take longer than four coffee breaks. But it maintains E-mu's fundamental principles: ease of use, major sampling/synthesis power, and sensible pricing.

Emu-Ensoniq, 831-438-1921, www.emu.com

\$995

If you don't need all the power of E-mu's E5000 and you want to save some bucks — but you still require an excellent sampler — look no further than the ESI 2000. Essentially it's a repackaged ESI 4000 at a lower price-point. Out of the box it comes with 4MB of sample memory, an internal floppy drive, and a SCSI port. Also included are loads of sounds.

The SCSI port didn't work on the first ESI 2000 we were sent. E-mu quickly provided another, which worked fine. This one was also fortified with 32MB of sample RAM and the ESI Turbo Option Kit, which provides extra analog

outputs, S/PDIF I/O, and built-in effects. It's good to have extra memory, because you'll soon tax the standard 4MB when you get busy sampling, and you'll need it if you want to take advantage of many of the soundbanks on the included CD-ROMs. You'll also want a SCSI hard disk or removable-media drive so you can transfer those banks to media that allows the ESI to load more quickly than from CD-ROM.

Two collections of sound discs come with the 2000, and they should prove very useful. The *ESI-32 150MB Production Soundset*, Volume 12 of E-mu's Sound Library, is a dual-disc set

containing pianos, orchestral sounds, guitars, drums, percussion, sound effects, and loops. *Formula 4000: Protozoa* is a single CD-ROM featuring sounds from E-mu's Proteus/1, 2, and 3, Vintage Keys and Vintage Keys Plus, Orbit, and Planet Phatt synth modules. Also included is a CD-ROM with a preview version of a Windows 95/98 interactive graphics program called Lava Player.

If you don't have a CD-ROM drive, you can start your 2000 sample-playback excursions with the two-floppy soundbank called ESI Turbo. This bank contains 70 presets with lots of cool, expressive, primarily electronica-oriented synths, organs, EPs, percussion, basses, and sound effects. E-mu squeezed some great stuff into the 2MB of material here.

I'm disappointed the 2000's LCD lacks a graphic waveform display, which would make sample editing easier than working with numbers. It's also annoying that the 2000 won't lock its LFO, envelopes, or optional effects to incoming MIDI clocks.

Despite those bummers, I found working with the 2000 fairly uncomplicated — although you may want to keep its menu map handy so you can use its ten-key pad for quick access to the various operations rather than scrolling



For less than a grand, E-mu's ESI 2000 will get you up and sampling. Four megs of sample RAM, a floppy drive, and a SCSI port come standard.

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KEY INFO #250

through the menus. You can quickly switch from single- to multitimbral mode, and the 2000 uses the same easy track-assignment utility as the Proteus synth family. Sampling is a breeze, thanks to automatic sample triggering, normalization, truncation, and key-assignment functions.

Once you've captured audio, you can shape it using the 2000's impressive synthesis engine (an "oo-ah" vocal filter on sax sounds gorgeous), or perform digital operations ranging from simple to serious. Some of the complex DSP operations take considerable time, especially "transform multiply." I ran a pair of stereo eight-bar patterns through the process and it took nearly four hours! At least the 2000 warns you ahead of time with a process-time estimate. Were the results worth the wait? In this case, no. The sources didn't merge as well as I'd hoped. Experimentation is the key . . . using shorter samples to start with.

I had lots of fun with the ESI 2000. It's a quick study, records sounds with great clarity, and provides some cool sample-mangling processes. Do I have to give it back? **MARK VAIL**

KEY INFO #121

Vital Stats

OS version reviewed	3.02
Polyphony	64 mono, 32 stereo
Supported sample formats	E-mu ESI, Emax-II, Akai S1000/1100
Sample memory	4MB standard, expandable to 128MB using 72-pin, low-profile non-composite 64MB SIMMs with ≤70ns response time (2 SIMM slots; 4, 16, or 64MB SIMMs can be used)
Supported sample rates	22.05 or 44.1kHz (32, 44.1, or 48kHz via S/PDIF I/O with Turbo Option)
Resolution	16-bit input, 18-bit output
Sample editing	loop, truncate, cut/copy/paste, sample calculator, taper, gain change, reverse, stereo to mono, left to right, DC filter, sample integrity, sample-rate convert, digital tuning, compress, parametric EQ, time-compress, pitch change, transform multiply, doppler/pan, sonic enhancer
Loop types	1
Filter	19 types including low-, band-, and highpass, swept EQ, phaser, flanger, vocal, distorted, parametric, and Z-plane; 2-, 4-, and 6-pole rolloff slopes; variable resonance
LFO	1 per voice with delay and variation; triangle, sine, square, and sawtooth waveforms; speeds from 0.08 to 18.14Hz
Envelope	3 AHDSRs per voice
Syncable functions	none
Effects (optional)	2 stereo effects processors with over 70 effects algorithms
Analog I/O	main R/L outputs, R/L TRS submix out/mix in jacks, R/L mic/line-level sampling inputs, and stereo headphone jack (all 1/4")
Digital I/O	coaxial S/PDIF optional
Word clock I/O	none
MIDI I/O	in, out, thru
SCSI I/O	50-pin standard
Power connector	standard 3-pin
Options	ESI Turbo Option Kit (S/PDIF I/O, extra analog I/O, internal effects), \$495
Dimensions/weight	17" W x 10.75" D x 3.5" H (2U); 10 lbs.



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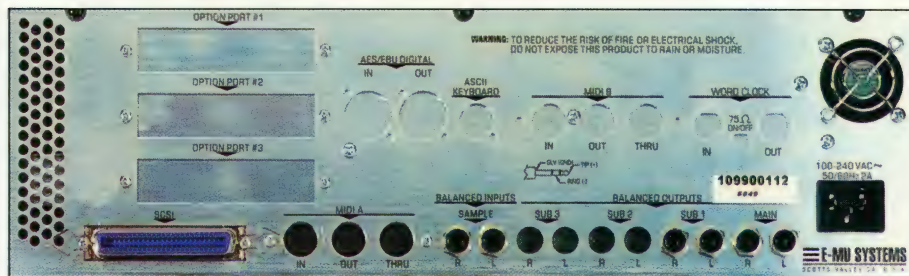
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KEY INFO #4

Continued from page 76

effects send/returns, making the unit versatile for stage and smaller studios that are short on mixer ins and outs.

■ **Sounds.** The E5K ships with a single CD-ROM of E4-format sounds that includes a good cross-section of pianos, orchestral instruments, synth pad textures, electronica synth tones, and drum kits ranging from organic to electronic. You also get two audio CDs of techno-oriented



Here's a look at the E5000's back panel without expansion options. The "blanked-out" slots give you an idea of its expandability. For a list of add-on options, see the "E4 Emulator Comparison Chart" on page 74.

loops that sound, to my ears, as if they were created using the E-mu Orbit and Planet Phatt. Though other Ultra samplers come with many more CD-ROMs, the one shipped with the E5K does a good job of covering the bases and then some.

■ **Beat Munge.** Anyone who works with loops will love this feature. It's incredibly reliable, intuitive, and just so cool, you're bound to be inspired by it. I was skeptical at first, thinking that its performance would be hit or miss. But after using it on a number of different styles of loops, I was sold on its capabilities.

■ **Tons of expansion options.** The E5K puts high-powered sampling within the reach of even the most budget-conscious musician. It's expandable almost to the point of becoming a full-blown E4XT Ultra, so it will be able to grow as your studio grows. Don't need digital I/O right now? Fine. Maybe in a year? Don't worry — you're covered.

■ **EOS Link.** This software lets you control the E5K from your computer via SCSI (see Figure 2).




Fig. 2. Using the EOS Link software (Mac and PC), up to four Ultra samplers can be controlled remotely from your computer via SCSI. All of the sampler's functions are accessible from the software.

...and what's not

■ **AIFF and WAV files.** While it's true that EOS v.4.01 supports AIFF and WAV file importing, you can only load these file formats via floppy disk, not SCSI. C'mon, who uses floppies anymore? Besides, what good is a 1.4MB disk if you have an 8MB sample?

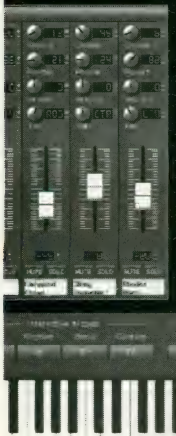
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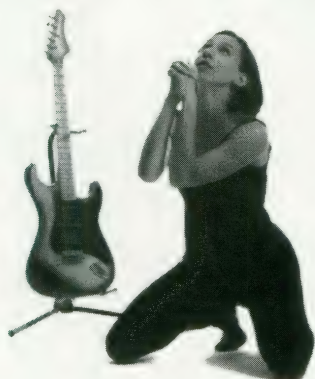
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■ **User manual.** The E5K ships with a Getting Started manual that covers enough ground to get you set up with creating and mapping samples, but that's about where it ends. The "real" user's manual is available only on CD-ROM, which means you'll have to have a computer to access the complete documentation. And believe me, you'll need the documentation to get the most out of this machine. (By the way, all other Ultra models come with printed user manuals. In my humble opinion, documentation is not the place to cut corners, especially since it's a bad idea to assume that every musician who wants a sampler already owns a computer.)

■ **Region audition.** It's nice that you can audition samples by pressing the E5K's Audition button, thereby circumventing the need for an external MIDI controller to hear your sample edits. However, there's no way to audition just a portion of a sample. Oftentimes I wished for an audition feature that would let me hear just the portion of audio I wanted to loop. As it is, pressing Audition plays the sample from the beginning, and plays the loop only after playback reaches the loop endpoint.

■ **Compare button.** Many times while working on this review, I found myself wishing for a compare button that would let me A/B my changes to a preset with the original.

■ **Virtual sampling.** That is, sampling direct to disk (and playing back direct from disk). The Akai S6000 can do this, so can Roland's SP-808; but not the E5K. It's an incredibly handy thing to record and play back from hard disk, even if it is only two tracks.

■ **Sample RAM.** The E5K only ships with a measly 4MB of sample RAM. Fortunately, it can be expanded to 128MB via computer SIMMs just like its Ultra siblings.

In use During my E5K review, I covered all the typical operations I would expect to perform with a sampler, including DSP surgery, tweaking a multisampled keyboard instrument sample for the right responsiveness, chopping up drum loops, and creating special sound effects. I dig the E5K's non-realtime DSP features, especially its compression, which I applied just to the two and four snare hits of some drum loops for a heavy-handed, lo-fi distortion effect.

Creating multisample-mapped keyboard presets gave me plenty of headaches. While EOS is certainly a powerful operating system, I found it confusing. And due to the lack of screen real estate, certain terms are abbreviated to a cryptic letter and number

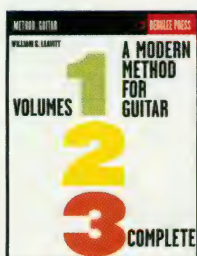
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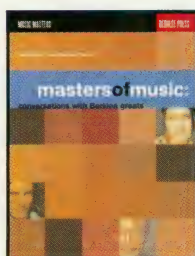
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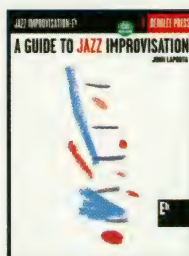
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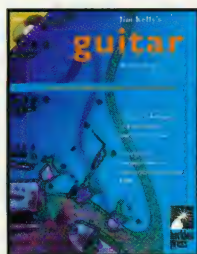
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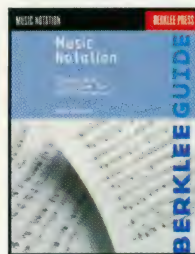
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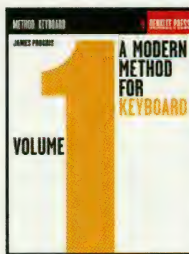
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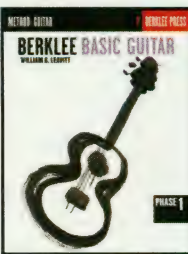
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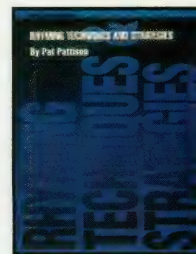
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KEY INFO #222

PAST EMULATOR COVERAGE

We've been covering the Emulator line of samplers for a while. For more details on the Emulator sampler series, refer to these *Keyboard* back issues.

December '95 — Sampler Buyer's Guide

June '96 — E4K Keyboard Report

December '96 — Samplers Feature

July '98 — E-Synth Keyboard Report

November '99 — E4 Hot Tips

combination, which made the experience of getting down into the lower levels of preset editing less than clear. Anyone who's not already familiar with the "E-mu way" should expect to spend a considerable amount of time shedding with EOS.

Sample editing was relatively pain-free, despite the lack of region audition. The E5K's graphic waveform display can zoom to the sample level, so I didn't find it hard to locate good loop points. One sample editing feature particularly I liked was the ability to scrub a sample using my synth's mod wheel. Slight motions in either direction will slowly scrub the sample, while full throw will fast advance or rewind — very useful for quickly pinpointing start and end points.

In comparison to my previous E-mu sampler, the E-Synth (with EOS version 3.2), the E5K is a good deal faster at executing all of its processes, from loading sounds to compression and pitch shifting. Speaking of which, the E5K did an outstanding job of pitch-shifting samples without making them sound unnatural. Furthermore, aside from an occasional glitch, the operating system is solid; I experienced no crashes or fatal flakiness. ■

KEY INFO #120

Associate editor John Krogh is still trying to decide how to spend the money he received for selling his "fully loaded" Ensoniq EPS-16 Plus sampler a year ago. Feel free to send suggestions to jkgrogh@mfi.com.

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Technosaurus Microcon & Cyclodon

ANALOG SYNTH MODULE & SEQUENCER

by Zon Vern Pyles

Monophonic analog synth module and 16-step analog sequencer.

Pros: *Microcon:* Great sound in a very small package. All-analog signal path. Switchable filter cutoff slope (12/24dB/octave). External audio input. Front-panel trigger button. *Cyclodon:* True analog sequencing. DIN-sync input. Clever realtime sequence length controls.

Cons: *Microcon:* No noise generator. Filter cutoff knob won't close filter completely. *Cyclodon:* No gate input for external LFO or step shifting. No quantized output. No rests. Interface cables not included. *Both:* No MIDI. No power switch. Won't run on batteries, and power supplies are optional.

Bottom Line: Both the Microcon and Cyclodon are attractive as 1V/octave expanders for an existing system or as a first step into analog gear. Beginners may be more than happy to tweak away for hours making music with this compact analog duo. Experienced synthesists will crave more sonic versatility than the Microcon offers, but they should appreciate how warm — yet precise — its lowpass filter sounds. If you have an analog modular synth, a MIDI-to-CV converter, or something with Roland-style DIN-sync, this fun little combo might satisfy your hunger for some true analog synthesis in your rig.

Technosaurus, U.S. dist. by the Drum Machine Museum, 415-613-9862, www.drummachine.com

\$329 each

It's a bit ironic to report that Technosaurus of Switzerland — the manufacturer of one of the largest modular analog synthesizers available, the Selector System D — has released what may be the world's smallest true analog synthesizer module: the Microcon. Since it's only slightly larger than a VHS video tape, finding a place in your synth rig for this little marvel isn't likely to present much of a challenge.

Taking note of the rhythmic nature of currently popular electronic music, Technosaurus came up with the identically sized Cyclodon analog sequencer. It makes a terrific companion to the Microcon (or any other analog synth with the right kind of inputs) for a compact, "fits-in-a-briefcase" analog synth rig.

Microcon For the Microcon, Technosaurus took the classic, basic synth voice of VCO-VCF-VCA, added a sub-oscillator, an LFO, and a basic envelope generator, and squeezed them into a solidly built aluminum

chassis. Its 12 knobs have a nice rubbery feel and don't wiggle when you tweak them. The black front panel has a blue dinosaur-skin pattern (purple on the Cyclodon) with white text labeling on all the controls and connections. Its color scheme is suitable for playing the Microcon in almost any lighting situation, in the studio or onstage.

Since the Microcon doesn't have MIDI, you'll need some sort of MIDI-to-CV converter, a 1V/octave CV synth, or the Cyclodon to drive it. Its audio output is 1/4" and the CV and gate input jacks are 1/8"; all three are TRS. If you use a 1/4" insert cable, the Microcon's output doubles as an audio input, so you can process external audio through its lowpass filter and VCA. You can silence the oscillator so you only hear the external signal by inserting a mono 1/8" plug into its gate input; insert a 1/8" TRS-to-TRS cable and you'll hear the internal oscillator and the external signal. By using two control-voltage sources and an insert cable that has a 1/8" TRS plug, you can

independently control the Microcon's filter and VCA envelopes.

The Microcon's VCO offers square or sawtooth waveforms. A Mix knob blends in the square wave sub-oscillator. On the review unit, I could always hear a little bit of the sub-oscillator, even when the Mix knob was at its minimum position. An octave switch and an LFO depth knob complete the VCO controls. It's obvious Technosaurus was aiming for as basic an analog synth structure as possible, but I was surprised at the lack of a noise waveform. This would have made the Microcon suitable for a wider variety of electronic percussion and environmental sounds.

A triangle or square wave is generated by the single LFO. It's always output to the VCO and VCF, and you control the modulation amounts with a pair of depth controls. The LFO rate has a pretty wide range: It can provide a sweep that lasts several seconds or be tuned up into the low end of the audio spectrum to create some clangerous sound effects.

The envelope generator has attack and decay knobs and a release on/off switch, but there's no sustain level control. Sustain is provided at the VCA via a mode switch for selecting either the AD envelope or a gate. In gate mode the VCA opens and closes with an immediate attack, a full sustain, and an immediate release. Master volume is set with the VCA level knob.

The quality and character of the Microcon's VCF is outstanding. Run the sawtooth wave through it and slowly raise the cutoff frequency. At high resonance settings you can very clearly hear each new, emphasized harmonic; it jumps right out at you. The filter will self-oscillate, and it offers a selectable cutoff slope of either 12 or 24dB/octave. While 12 is great for buzzy sweeps, 24 is better for a warm sound. The filter also has a CV on/off switch to determine whether the



The VHS tape-sized Microcon synth module (left) and Cyclodon sequencer make for a fun analog combination.

cutoff frequency will be affected by the incoming pitch CV. If you plug a 1/8" TRS cable into the CV input, you can independently control the pitch and the filter. The filter's only *caveat* is, the cutoff won't go low enough to completely shut down the sound. But wow, I love the sound of this filter.

Variable glide for incoming control voltages, a tuning knob, and a trigger button are all provided. The trigger button is handy for triggering a sound without the need for an incoming gate signal, and you can use it as a legato envelope selector. When you hold the button down, the Microcon envelope ignores incoming gate signals until it's released, but the VCO and VCF can still follow incoming CV changes. Also, the trigger button really comes in handy when you're processing external audio through the Microcon for filtering and envelope effects.

Cyclodon Analog sequencers aren't something you encounter very often these days. Dinosaur hunters can sometimes snag a rare Moog 960 or an ARP 16-step sequencer if they dig deep enough . . . into their wallets. The Cyclodon doesn't have all the bells and

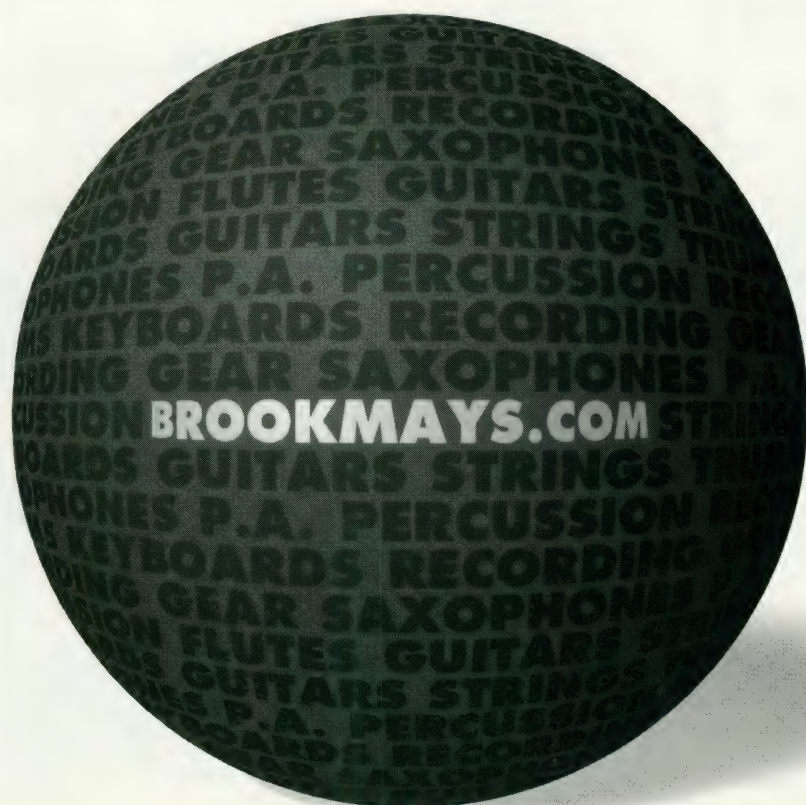
Vital Stats

MICROCON:

Synthesis type	analog
Polyphony	1 voice/monophonic
Voice controls	1 oscillator with sawtooth and square waveshapes, octave switch, square-wave sub-oscillator, resonant lowpass filter with switchable cutoff slope (12 or 24dB/octave), cutoff frequency, resonance, envelope amount, and CV switch; 1 LFO with square and triangle waveforms for oscillator and/or filter modulation, independent depth controls; 1 envelope with attack and decay time controls and release switch; VCA level control and AD/Gate switch; glide and tune controls
Performance controllers	12 knobs, front-panel trigger button
Memory	none
Effects	none
Audio I/O	1/4" TRS output doubles as audio input (tip is output, ring is input)
CV I/O	1/8" TRS CV and gate input jacks
MIDI I/O	none
Power requirement	12VDC, 38 milliamps, tip positive (AC-to-DC adapter not included)
Dimensions/weight	8-1/8" W x 4" D x 2" H; 1.2 lbs.

CYCLODON:

# of steps	16
# of patterns	1
# of songs	none
CV range per step	0 to +5V
Performance controllers	17 knobs (including tempo), manual step button, 4 sequence-length switches
Gate outputs	+5V gate and S-trigger; internal jumper to switch the gate to +12 volts
Synchronization	internal, external DIN sync with selectable clock division ratio (16, 8, 4, 2, and 1)
MIDI I/O	none
Analog I/O	1/8" CV out, 1/8" gate/S-trigger out, 5-pin DIN sync in (cables not included)
Power requirement	12VDC, 25 milliamps, tip positive (AC-to-DC adapter not included)
Dimensions/weight	8-1/8" W x 4" D x 2" H; 1.2 lbs.



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whistles of those predecessors, but it has some cool features that make it a really handy addition to the Microcon or another analog synth you might have.

It has 16 knobs for tuning the CV output level for each of the 16 steps. The CV output range for each step is 0 to +5V, which is a five-octave range on a 1V/octave system. Since the output voltage of each step is smoothly variable as opposed to quantized, which would have stepped the output into even increments such as half-steps, it takes a little while to tune each knob to the desired note. Each step also sends a +5V gate signal, which is compatible with many analog synths.

The art of performing with an analog sequencer has a lot to do with manipulating the number of steps in the sequence. For this the Cyclodon provides four toggle switches whose settings determine the number of steps, from one to 16. They are labeled +8, +4, +2, and +1. When used individually, they each represent the number of steps that will play before cycling. When used together they are summed. For example, +8 and +4 combine to give you a 12-step sequence. With all the switches down,

you get a 16 step-sequence. This is very useful and fun for manipulating the number of steps in real time. Unfortunately, there's no way to program rests in your sequence; each step will always output a gate.

Cyclodon tempo ranges from approximately 25 to 250 bpm using the internal clock. Or you can switch to manual mode and use the run/stop button to increment from one step to the next. Strangely absent is an input jack for syncing the Cyclodon to external sequencers — or even another Cyclodon. However, a DIN-sync input jack is provided so you can lock the Cyclodon to a number of pre-MIDI drum machines and sequencers, such as a Roland TR-606 Drumatix. This feature works really well, especially since a global clock division ratio determines how many steps fly by per measure: one, two, four, eight, or 16.

In General Neither the Microcon nor the Cyclodon has a power switch. On top of that, they won't run on batteries and they don't come with power supplies. For this review, Mickey Tachibana of the Drum Machine Museum (the U.S. distributor for Technosaurus)

provided us with two 12V AC-to-DC adapters from Radio Shack (part #273-1662A, \$12.99 each), but customers will be responsible for picking up their own power supplies.

Plugging in the adapter turns the unit on and illuminates a power LED. The LED on the Microcon sent for review functioned intermittently, but the unit never actually lost power during use.

Interface cables aren't supplied with either unit. Suitable cables are also available at Radio Shack. A 1/8" TRS-to-TRS cable (part #42-2387) costs \$3.99, and a 1/8" mono cable (part #42-2152) costs \$3.49. Insert cables can be purchased at many music stores.

As we went to press, Technosaurus announced the coming of the Microcon II (price TBA), which provides MIDI in and CV and gate outputs. You could combine the original Microcon with the new model for a MIDI-driven dual-oscillator analog synth system. ■

KEY INFO #124

Zon Vern Pyles is currently composing and recording his upcoming CD, AlienMusic, using virtual and true analog modular synthesizers.

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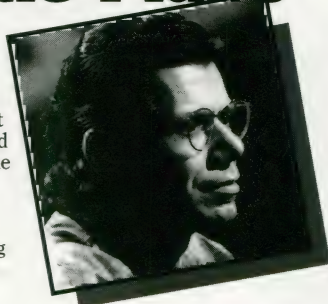
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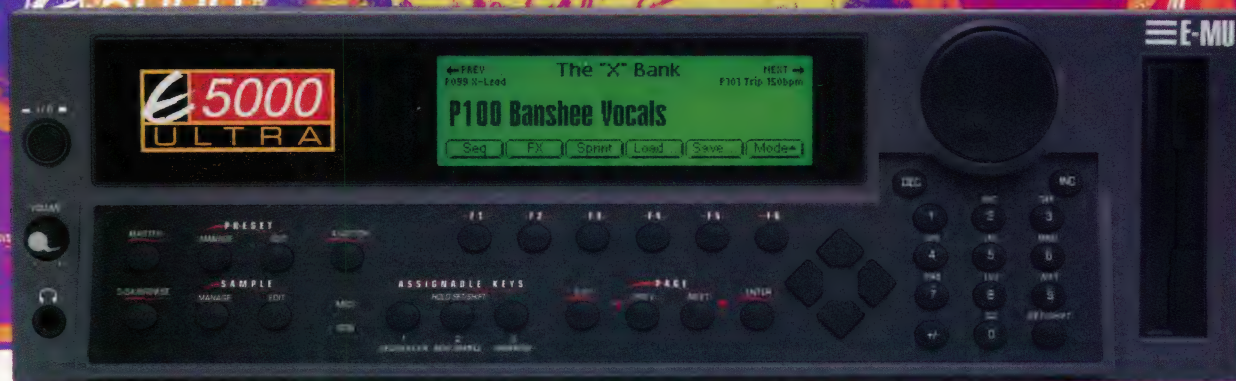
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Ultra Sound Support via the vast Emulator Sound Library and the ability to quickly and completely import AKAI S-3000/1000/1100 and Roland S-700 Series sound libraries.

Ultra Upgrades the E5000 Ultra comes with 64 voices, and can accommodate 128MB of RAM. Like the rest of the Ultra family, you can upgrade with the many Ultra options available:

- **8 output expander:** Expands the 4 balanced outputs to 12.
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Mutronics Mutator

by Mark Vail

DUAL ANALOG LOWPASS FILTER

Dual rackmount 24dB/octave lowpass analog filter/envelope follower.

Pros: Moog-like analog filter sound. Potent processing capabilities. Dedicated knobs and switches. Envelope triggering from secondary audio source. LFO waveform retriggering from MIDI note-ons.

Cons: No patch storage. Simple AR envelopes. No MIDI output. Not all parameters controllable via MIDI. Expensive.

Bottom Line: Although it's a pricy proposition, the Mutator is a powerful analog filtering processor with useful onboard, MIDI, external audio, and CV control possibilities. Its lowpass filters are fixed at 24dB/octave rather than having a switchable rolloff slope, but they're excellent-quality components that sound superb. Anyone looking for something that can beef up weak, static audio with smooth stereo filtering effects should consider the Mutator.

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\$1,125; \$1,275 for balanced I/O

Of all the peripheral components in an electronic music system, the filter may be the most important sonic link. A good filter can make a cheesy sound massive, a brittle sound smooth, a boring sound lively. No wonder back in the early days of synthesizers, when Bob Moog could afford to patent only one of his analog circuits, he chose his filter.

During the past few years we've seen a rebirth of the dedicated hardware filter. Most notably there have been the Sherman Filterbank, Big Briar Moogerfooger MF-101 Lowpass Filter, and Electrix FilterFactory (reviewed Nov. '97, May '99, and Sept. '99, respectively). The latest to hit the U.S. shores comes from Britain in the form of the Mutronics Mutator, which has been available on that side of the pond since the mid-'90s.

Overview The Mutator is a stately beast and carries a Jaguar-like price, but then it's a high-quality item: very well constructed inside

a metal 2U rackmount chassis, with lots of knobs and switches that make it fairly straightforward to operate. Packed inside are a pair of 24dB/octave lowpass filters that can work independently on separate incoming audio sources or together on a single mono input. Each filter has its own controls, LFO, VCA, envelope follower, and envelope-follower level LED. Mutronics' documentation does a good job of explaining all the workings, and describes and illustrates a handful of specific applications.

Two versions of the Mutator are available: one with unbalanced audio connectors, the other with balanced I/O for pro installations. Each model has inputs for controlling its filters via MIDI, control voltages, and audio from external sources. The unbalanced model is also available without MIDI for \$1,025.

In its simplest form, the Mutator will function as two independent envelope-driven filters. Plug two sources into its two channels and the signal from each source will be routed through to its respective output. The envelope followers

can then be adjusted to open the filters and VCAs depending on the amplitude of the incoming signals. The two audio inputs are normalled; in other words, if you only plug a source into the first input, the incoming signal will be routed to both filter channels. (Plugging a signal into channel 2 alone won't work the same way; it will only travel through the second filter circuit.) That means you can input a single source and the Mutator can process and output it in stereo — simulating, for instance, an auto-panner.

Attack, release, and sensitivity controls appear for each channel's envelope follower. The envelope follower LED indicates whether the incoming signal is strong enough to trigger the envelope follower; the LED dims at the rate determined by the release setting. An ADSR (attack, decay, sustain, release) envelope would have been more flexible, but there is a way to simulate such a thing — as I'll explain in the CV & External Control section below. The envelope/gate switch determines whether the filter contour will be shaped by the AR settings or simply switch full on and then off, the threshold being set by the sensitivity knob. Even in gate mode the attack and release controls define how quickly the filter opens and closes, essentially making it an ASR mode.

Each filter has the familiar cutoff and resonance knobs, but there's also an envelope contour knob that allows either a positive or negative sweep. The negative direction works better with a high cutoff, as it closes the filter instead of opening it.

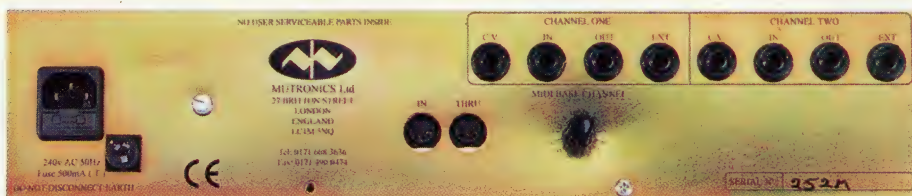
Four waveforms are provided by the LFOs: triangle, square, sawtooth, and reverse sawtooth. The LFOs can selectively modulate the filter, the VCA, or both, and they can be linked so that both filter channels are modulated by the same LFO. An invert switch allows one channel to modulate in an opposite direction from the other channel, which is how you get auto-pan and other stereo effects.



Plenty of knobs and switches adorn the Mutronics Mutator's front panel. Turning the knobs can add a great deal of expression to a performance.

Vital Stats

Filter circuitry	24dB/octave analog lowpass
Controls per channel	attack, release, and sensitivity envelope-follower knobs, with internal/external source and envelope/gate switches; LFO waveform selector, with rate and depth knobs and VCF/VCA/both switch; cutoff frequency, resonance, and positive/negative envelope sweep knobs; bypass and VCA in/out switches; channels share link in/out and normal/invert LFO link switches
Performance controllers	18 knobs, 12 switches
LFO waveforms	triangle, square, sawtooth, and reverse sawtooth
Memory	none
Audio I/O	unbalanced or balanced 1/4" input and output for each channel (normalised inputs)
Control I/O	1/4" CV and external audio control input (sidechain) jacks for each channel (normalised)
MIDI I/O	in, thru
Power connector	standard 3-pin
Dimensions/weight	19" W x 10.5" D x 3.5" H (2U); 10.2 lbs.



Across the top right of the Mutator's rear panel are the 1/4" CV, audio input, audio output, and external input jacks for both of the unit's processing channels. For a few dollars more, you can have balanced audio I/O. Below the channel 1 jacks are the MIDI in and thru connectors. The base MIDI channel is set with the rotary knob to the right of the MIDI jacks. The two Mutator channels will respond to incoming MIDI data on the base and base-plus-one channels.

Each channel can be independently bypassed, allowing you to compare the direct and filtered signals. In addition there's a VCA in/out switch for each channel, so that the final output either goes through the VCA or comes directly from the filter. There aren't dedicated envelopes for the VCAs, but they can be modulated using the internal LFOs or MIDI volume from an external source.

External Control Within each filter channel, inputs are provided for sources of control voltages or audio. Mutronics' documentation says the CV inputs are for use with an external MIDI-to-CV converter, but I got great modulation effects by running the LFO output from my Moogerfooger MF-102 Ring Modulator into a CV input. Passive CV pedals from Ensoniq and Yamaha, however, had no effect.

Any audio signal can be routed into the external inputs to provide alternative sources for the envelopes. I ran a fast arpeggiated pattern into an external input and got a cool modulated filtering effect that sounded great on a sustained synth sound. Ditto when I used a drum pattern as the external signal. Slowing down and speeding up the patterns also proved to be an effective technique.

To make the Mutator act as if it had ADSR envelopes, you could route a sound with the envelope contour of your choice into the external input and switch the Mutator's filters to envelope (rather than gate) mode. Surprisingly enough, it works!

Like the audio inputs, the CV and external inputs are normalised; plug a source into the channel 1 input and both channels are affected equally unless a plug is inserted into the channel 2 input.

MIDI The MIDI implementation seems to have been added as an afterthought rather than being designed in from the beginning. On the downside, none of the Mutator's knobs or switches sends MIDI. In fact, there's no MIDI out connector, just in and thru. In addition, the Mutator's processing channels are fixed to two consecutive MIDI channels. (The second channel wraps to 1 if you set the base channel to 16.) If you want to link the two channels via MIDI the same way you can for audio, you'll have to use some sort of external MIDI processor to duplicate data on one channel to the next.

The Mutator will respond to mod wheel and pitchbend to control cutoff frequency, and to MIDI controller 7 to vary VCA amplitude. These

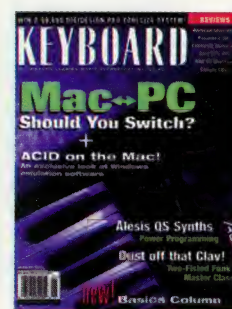
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KEY INFO #70

Mutronics Mutator

assignments are fixed, and no controller remapping is allowed internally.

Note-ons will trigger the envelope or gate, and the Mutator will recognize MIDI note numbers and open its cutoff frequency accordingly. By connecting both MIDI and audio from the same keyboard, you can get the Mutator's filter to track notes you play — just as you can do with the filter in a Minimoog and other old analog synths. Crank up the resonance and you can tune the self-oscillating filter using the cutoff knob to match keyboard pitch.

While the Mutator doesn't provide true LFO sync via MIDI, it will retrigger the LFO when it receives a note-on. This is actually pretty cool and — in a pinch and with some knob tweaking — can simulate LFO sync. First the filter channel has to be set to envelope instead of gate mode. Then you manually adjust the LFO rate to be a bit slower than the tempo you're working with. Successive notes will now retrigger the LFO. This method can also be used to mutilate the standard LFO waveforms provided to produce interesting stepped patterns. For instance, notes that occur more frequently than the wavelength of the modulating waveform can transform a triangle into something more sawtooth-like, and a square wave could be shortened to seem as if you have control over pulsewidth modulation. Tweak the rate knob while a sequence or arpeggiated pattern plays back and you'll discover some cool effects.

In Use In my home studio I piped four digital instruments through the Mutator: Yamaha DX7, E-mu Proteus/1, Hammond Suzuki XB-2, and Clavia Nord Lead. The results were very satisfying and inspiring — especially for the filterless DX and Proteus. Their familiar timbres took on new life and depth. And although the Nord's digital multimode filter is more flexible, there's a satisfying quality inherent in good analog filters like those in the Mutator that can't be perfectly duplicated digitally.

I also tried to compare the Mutatored sound of those instruments to that of my Minimoog, but after traveling cross-country and being carted to many gigs over two decades, the Mini's components aren't very stable and misbehave in unexpected and undesirable ways. On one hand that makes it more lifelike, but on the other you want solid, predictable performance when you can get it, and that's delivered by the Mutator. ■

KEY INFO #123

Senior associate editor Mark Vail loves getting opportunities to pull out and play his mid-'70s era Minimoog. There's still nothing else like it.

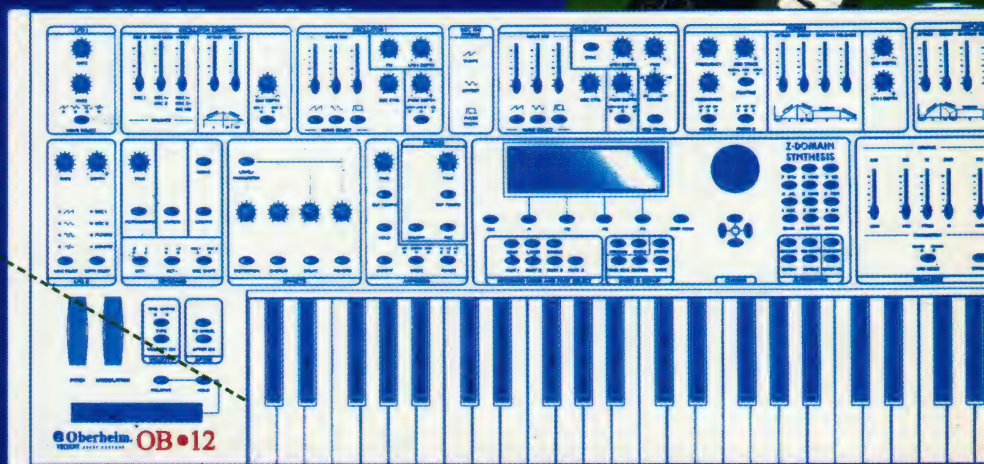
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future

Nearfield Multimedia Marimba Lumina

MIDI MALLET PERCUSSION CONTROLLER

by Jim Aikin

Marimba-style MIDI controller with advanced performance software and built-in sounds.

Pros: Position sensing of mallets on bars. Complex user-defined performance responses, including preprogrammed and realtime note sequences. Built-in synth card for instant playability. Visual feedback from LEDs under playing surface. Light and easy to carry.

Cons: No sound programming (except effects) of built-in synth. Can only be played with factory mallets. No dedicated master volume knob.

Bottom Line: Bottom Line: Marimba Lumina is a real step forward for mallet players. It's not cheap — but then, neither is a good marimba. Far more than a board full of velocity-sensing triggers, it has a level of performance programming power that invites you to discover new musical effects. Being able to play multitimbally with four mallets opens up some amazing possibilities, as does the ability to play one note with downstrokes and another with upstrokes. Even if you're not a mallet player, you may find that a Marimba Lumina makes a bold visual statement in a live show. And as a studio accessory, it invites you to discover melodic and rhythmic patterns that don't lie under your fingers on a keyboard. While the total number of MIDI mallet players is small, it's hard to imagine any of them not being excited by this instrument — and that's a key reason why it deserves to receive our Key Buy award.

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When it comes to designing performance interfaces for electronic instruments, nobody has more fresh ideas than Don Buchla. In the '60s he was building modular synthesizers, but these days he concentrates on gadgets that transmit MIDI. His Thunder controller (reviewed July '90) is played with the fingers on touchpads, while Lightning (reviewed Sept. '91) is played by waving infrared-transmitting wands in the air.

The Marimba Lumina has some of the same software features as Thunder and Lightning, but it's aimed at mallet percussion players. In a sense, Buchla is taking a step backward by basing a new instrument on an existing one. But he's also taking a step forward by teaming with high-tech manufacturer Nearfield Multimedia. The parent company, Nearfield Systems, is new to the music industry, but has a strong background in radio antenna technology — an essential component in the design of the Lumina.

The Marimba Lumina has 3-1/2 octaves of marimba-style performance pads, plus ten individually definable trigger pads (the pentagons across the top) and a pair of horizontal strips for sending continuous controller data. In fact, all of the chromatic "bars" can transmit continuous controllers. The Lumina is played with the four foam-headed mallets shown here. The sticks of the mallets are color-coded, and the Lumina can be set up to respond to them individually — for example, by transposing certain mallets up or down an octave to allow you to play impossibly wide chord voicings. The pads and bars do double duty as data inputs for programming.



While mallet players can adapt many of their existing techniques to the Lumina, they'll find that it has some potent resources not found on acoustic percussion (and not on your average MIDI percussion controller, for that matter). Notes can be sustained by holding the mallet on the pad after striking it. The pads can transmit controller data as you slide the mallet toward and away from you, allowing for pitch-bends, volume swells, and so on. You can trigger one note from a mallet-down event and another from a mallet-up, for fast tremolos. Best of all, each of the four color-coded mallets can transmit on its own MIDI channel. And the possibilities go far beyond that.

Hardware With its real walnut frame and stark black-and-white playing surface, the Marimba Lumina presents a striking appearance. The playing surface has one or more LEDs under each pad sensor. Normally the LEDs light up to show which pads are active, but you can switch them all on if your stage presentation involves playing in the dark. (You'll need to do this, as the surface is completely smooth to the touch, with no tactile feedback.) Buchla refers to the pads in the chromatic layout as "bars," by analogy with the bars on a real marimba, and we will too.

Although the Marimba Lumina is primarily intended to be a MIDI controller, it does have a built-in Yamaha XG tone generator. This won't provide the level of sonic sophistication you'd expect from an instrument in this price range, but it's more than good enough to listen to while you're programming new performance patches — and if your sampler goes down onstage, you have a backup. The sounds themselves are not programmable, but the Lumina can address the Yamaha effects, either by editing them when you call up a new preset, or with realtime controller data while you play.

The instrument is surprisingly light for something so large. It seems to be heavy enough not to scoot off of a stand while you're playing it, especially considering that the mallets are very light. The unit is not built with any hardware connectors for anchoring it to a stand, but if you're concerned about this, here's a tip: use Velcro.

You have to play the Marimba Lumina with the provided mallets, which are light, thin, and springy: Your usual mallets and sticks won't work. Each mallet has a passive (no battery required) electrical coil in it. It's the movement of the coils that's sensed by the playing surface. You can trigger a note, in fact, while a mallet is still about 1/8" above the

Vital Stats

Memory	50 ROM presets, 50 RAM presets
Control I/O	2 TRS switch inputs (4 switches), TRS CV input, TRS trigger input (2 triggers)
Audio I/O	stereo 1/4" TRS jacks; ring connectors provide external audio inputs, which are routed directly to outputs but controlled by system volume
Soundcard	Yamaha AWM2 tone generator, 480 ROM programs, 11 ROM drum programs, 32-note polyphony, effects
MIDI I/O	in, out, aux (thru)
Dimensions/weight	59-1/2" x 18-5/8" x 1-3/4". 21 lbs.

surface. The speed of the mallet as it's descending generates MIDI velocity. The position on the bar is sensed as well.

In the unit we received for review, the blue mallet was sometimes not sensed when we tapped the midrange B at a low velocity. This mallet worked on all the other bars, and the other mallets worked on this bar. We didn't have the Marimba Lumina long enough to evaluate the long-term reliability of the sensors or the durability of the mallet heads, but Buchla tells us, "The sensors are just printed circuit traces — nothing to wear out. We have logged over 5,000 hours on one mallet set with no sign of weakening."

The bar spacing is 2-1/4", and the bars are almost 5-3/4" deep. This is smaller than the bars in the bass range of a real marimba, but larger than those in the treble range. The dead area between bars is minimal to nonexistent, so you don't have to worry about not triggering a note if you're a little sloppy. At worst, you'll play a wrong note.

Concerned about only having a 3-1/2 octave range? Don't be. It's easy enough to program a couple of the small five-sided pads at the top of the instrument to function as octave up/down switches. If you'd prefer, you can program them to transpose the whole chromatic bar array incrementally with repeated taps — in half-steps, or in some larger interval.

The Lumina has input jacks for a CV pedal, two switches, and a high-impedance trigger. These are dual tip-ring-sleeve inputs, so if you have the right hardware you can actually hook up two triggers and four switches. TRS jacks are also used on the audio outputs, so you can route an additional stereo audio input through the Lumina on the way to your mixer. If you do this, the Lumina's master volume will also govern the volume of the audio passing through — handy if you're 20 feet from the P.A. On the downside, you have to assign the master volume to one of the pads in any patch where you plan to use it: The Lumina has no dedicated volume control.

The unit comes with 50 performance presets in ROM, 50 user presets, and a slot for a tiny card that stores an additional bank of 50. Tapping the

Prog pad turns the ten small pentagonal pads into a numeric entry system and the right-hand strip into an inc/dec control. After entering the number of a preset, you tap the Prog button again to call it up. For more complex concert situations, you can program any stimulus (bar, footswitch, etc.) within a preset to step to another preset in various useful ways — not just chaining presets but returning to the previous preset, for example.

Programming Even if you're an old hand at programming MIDI master keyboard splits and layers, you'll likely find that the Marimba Lumina is throwing you a few curves. This is one deep controller.

All programming is done using the mallets. In edit mode, the pads and bars are not available for playing music, as they're used for selecting menu items and so on. It takes a couple of extra taps to get out of edit mode so you can hear what you've set up. The OS is laid out in a very sensible fashion, with a minimum of submenus. Not all of the options are apparent in the LCD, however, as some parameters can toggle among several different states, which in turn affect other parameters. The manual explains the possibilities pretty clearly, but you *will* need to read it.

A Lumina preset can contain up to 50 defined "patches." A patch, in this context, is a connection between a stimulus (a mallet striking a bar, a footswitch closure, or whatever) and an output. Since one patch is all you need in order to play with all four mallets across the entire 3-1/2 octave range, 50 patches is a generous allocation. Possible outputs for a patch include not only note-ons and note-offs, controller messages, program changes, and other MIDI messages, but also changes in the state of the Lumina itself. For instance, you could program a pad to mute the output on MIDI channel 2, and another pad to tell channel 2 to wake up.

Each of the bars can be defined individually, but more often you'll want to group them using predefined "cells." By default, the chromatic playing surface is divided into eight cells — the white notes in the bottom octave, the black notes in the bottom octave, and so

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Marimba Lumina



BEAT IT WITH A STICK

Since we don't have a mallet percussionist on our staff, we prevailed upon Tina "Bean" Blaine to drop by the office and play a little on the Marimba Lumina. Bean was one of the mainstays of a memorable all-female percussion-oriented band called d'Cuckoo; her current project is RhythMix (www.rhythmix.org).

She was impressed by the programming depth of the Lumina, and had no problems with the response time. After she had been playing for a few minutes, we asked how she felt about the uniform spacing of the pads. "I'm getting used to it already," she said. "I'd rather have slightly heavier mallets," she went on, "but I'm not a four-mallet player. If you're holding two in each hand, these thin sticks may be just fine. I like the way they bounce, though."

on. The cells can be grouped in various sensible ways. For example, one patch could use all of the "white keys" as a single zone, while another patch in the same preset responds to all of the "black keys."

After you've chosen a stimulus, a group of bars, and an output for the patch, you can customize its logic in various ways. If the output is a note, for instance, you'll want to choose between keyboard-style sustain (which requires a different playing technique than mallet players are used to) and some type of preset note duration. Note durations can be affected by mallet velocity and the position of the strike on the pad, among other possibilities.

When transmitting controller data from any of the chromatic bars or the horizontal strips, you have several options. The value of

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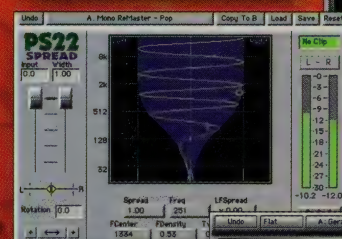
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KEY INFO #79

Marimba Lumina

the controller data can be based on absolute location, location relative to the spot where the mallet first touched down, or inverted response, for instance. If the controller data is being sent on two channels at once, the inversion applies only to one of the channels; this allows you to set up volume and filter crossfades from a single mallet.

Patches can be set to transmit controller data in a continuous LFO-type fashion, even when no mallet is active. Too bad you can't sync these pseudo-LFOs to MIDI clock. Another feature attempts to discern in a sensible way whether you're playing single-note lines or chords; what the patch does with this information is, again, programmable.

Each program contains three user-definable keymaps. Since any keymap can be used in any patch, you can define complex chromatic relationships on the "keyboard" layout, and use a different scale for each mallet. A typical usage for this feature would be to build a custom MIDI layout for a multisampled drum kit, but you could also use it to set up licks that would be impossible to play with four mallets if the layout were a standard chromatic scale.

Want to go further? Each program can store four "tuning tables" of up to 24 notes. These are not microtonal tunings (which would be quite difficult to set up on a MIDI controller) but rather arbitrary series of MIDI note numbers — monophonic mini-sequences, in other words. After assigning a tuning table to a patch, you can use the chosen stimulus — normally, but not necessarily, a mallet strike — to step forward or backward through the table. Another pad can be assigned to reset the table.

If you're into improvised music, you can do the same trick(s) with up to four realtime tables. These are loaded on the fly during performance. The number of notes a realtime table contains can be limited to less than 24, so you could improvise, for instance, a six-note pattern, then freeze the pattern and cycle through it from a footswitch while you play over it with the mallets.

The Lumina also sports numerous utility settings, such as velocity response curves and the option to *not* zero out controllers when changing presets. The latter can be useful if you've set up a chain of two or three presets to use in one song, and don't want to lose the current values when switching among them. ■

KEY INFO #122

Senior editor Jim Aikin is a science fiction author, a software developer, and an amateur classical pianist.

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SeaSound Solo

AUDIO/MIDI INTERFACE (WIN/MAC)

by Jim Aikin

Audio/MIDI interface for computer-based recording, plus bundled entry-level recording software.

Pros: Easy to set up and use. One-piece design is ideal for musicians with limited gear. Dual headphone outs with independent volume control. MIDI I/O included.

Cons: Processing single tracks in a hardware effects unit requires some repatching to create a send/return. Documentation is inadequate.

Bottom Line: If you've put off getting involved in computer-based recording because of the intimidation factor, SeaSound Solo may change your mind. It has a unique and sensible lineup of features that's bound to appeal to the first-time home recordist. You don't even need a mixer or a separate MIDI interface. Whether you're a guitarist/songwriter or a keyboardist who wants to invite a guitarist and vocalist over to your house to add tracks to your production, the Solo will take care of your basic recording needs in a way that no other hardware interface can match — which is why it merits our Key Buy award.

SeaSound, 415-485-3900, www.seasound.com



\$849.95

Computer-based recording has a bad reputation for being difficult to manage. As shocking as it may be to the average *Keyboard* reader, many musicians (guitarists, for example) would rather use a hardware-based recorder. They're willing to sacrifice editing power for reliability, ease of use, and just plain friendliness.

Synthesizer pioneer Tom Oberheim is out to change a few of these folks' minds with the Solo interface from his new company, SeaSound. The idea behind Solo is simplicity itself: You ought to be able to buy it, install it in your computer, and then use it more or less the way you would a guitar amp or a multitrack cassette recorder. While they haven't reached this nirvana 100%, they've come closer than most computer audio hardware manufacturers, who are still operating from more of a computer tweakhead mindset.

The first thing you'll notice is that Solo has actual knobs and level meters! Look a little closer and you'll see a couple of front panel

jacks labeled "inst." Yes, those are low-level inputs suitable for plugging a guitar or bass directly into the box. Solo has a lot more to offer the novice recordist, as we'll see.

Setting Up If you've never installed a PCI card in your computer before, dig down to the bottom of the Solo box, pull out the instructional videotape, and give it a spin. It's a short tape, with nothing on the more advanced aspects of computer-based recording. It does, however, walk you through the process of getting the card and software installed.

The cable connecting the PCI card to the Solo rackmount I/O unit is only about four feet long. Hope your rack is positioned close to your computer. Though the cable appears to use a standard 25-pin SCSI connector, SeaSound tells us it's actually an IEEE-1284 printer cable. They don't recommend using a SCSI cable. But in the event you need something slightly longer, you'll be happy to learn that they've tested cables up to 12 feet in length.

On both the Mac and the PC, software installation proceeded without a hitch for the most part. On the PC, I did have to install Adobe Acrobat Reader manually in order to view the software documentation for Cubasis AV, as the Cubasis installer program tried to find it in an incorrect directory.

On one particular morning, the Solo failed to "wake up" when I powered up the computer. I called SeaSound, and they suggested I might have a ground loop problem. Sure enough, when I unplugged the stereo audio cables between the Solo and my synth, powered the computer down, and powered it back up, the Solo was fine. Once it was running, I plugged in the synth's audio and was able to record without any further problems.

More attention to detail in Solo's printed documentation would have been welcome. The "Quick Start Guide" is studded with phrases like, "Speak or sing (*come on, we know you love to belt it out!*) into the mic," and, "steam up a pot o' java and put on your lucky day-glo-halo!!" Urpp. Yet some essential information on installation is not provided. When I went to the SeaSound website to download the latest drivers, for instance, I found that they were in a compressed file format — but with no heads-up to the novice to indicate that decompression was needed, or how to go about it.

Ins & Outs Let's work our way across the front and rear panels of the Solo, and see what kinds of options SeaSound has provided.

First up are a pair of mic/instrument input channels. Each of these channels has an XLR jack for a mic (with a phantom power switch — an essential feature) and a low-level, high-impedance "instrument" input for a guitar. Each channel has an input trim pot, a green/red LED for indicating signal present or overload, a level knob for controlling the level of signal



The differences between Solo and other computer audio interfaces are easy to see. It has knobs! Not to mention dual XLR mic inputs (with switchable phantom power for condenser mics) right on the front panel, low-level inputs for guitars, dual headphone outs, and actual multi-segment

level meters that you can read from across the room. The back panel has master outs, separate control room outs with their own front panel level knob, insert points for the front panel inputs, line ins for synth parts, and other goodies.

that's sent to the computer, and a monitor pan knob. The latter controls the stereo position of the channel in the monitor outputs.

I recorded a scratch vocal from an AKG C414B mic, and found that the Solo's mic preamps are quite respectable. Since you could pay more than the list price of this unit for a high-end mic pre by itself, it would be silly to expect audiophile quality from the Solo's pre's, but you won't have to apologize for them.

Associated with each channel is a rear-panel insert jack. This TRS jack lets you insert a hardware processor, such as a compressor or EQ, into the signal path before the audio is sent to the computer. As a vocalist with, at best, intermittent control over how loud I sing, I appreciate being able to patch in a compressor so as to avoid clipping my vocal tracks.

The next section is for controlling the rear-panel line input jacks. You have a knob for controlling the level of each, and, again, a knob for controlling the pan position of the input in the monitor mix. You'll also find a pair of record switches. (Since these are positioned one above the other, rather than side by side like the knobs, and since they're unlabeled, you may not realize at first that the top one is for the left channel and vice-versa.) These switches are important. If they're down, you can monitor the line inputs — which might come from a multitimbral synth playing your MIDI tracks, for example — without recording the audio.

The metering section boasts a pair of ten-segment meters. These can be switched to show either the input level or the output level coming from the computer. Your recording software will probably have its own output meters, and probably input meters too, but it's nice to have the option of viewing the levels here. The solo meters can be switched to peak hold operation — another nice feature.

The monitor mix section gives you separate level control over the left and right signals for both incoming signals and the mix coming from the computer. This is excellent, as it lets you track vocals or practice a guitar part while getting the right balance in your headphones. On my wish list: I was hoping maybe the Solo would pass incoming analog audio directly to the control room outs even when the computer wasn't powered up. The new Digidesign Digi 001 (reviewed Feb. '00) will do this, and it's a handy feature, as it makes it easier to use the interface without a mixer. But the Solo's power supply is on the PCI card — and realistically, how many computer peripherals can be used without a power supply?

Vital Stats

System requirements	PC: Windows 95/98, Pentium 133 (PII recommended), VGA color monitor; Mac: G3, PowerPC, or clone, OS 8.6 or higher, 2nd level cache; 32MB RAM, CD-ROM drive, PCI card slot
Analog I/O	front panel: two mic/instrument input channels with XLR and 1/4" jacks; rear panel: two 1/4" TRS inserts, two 1/4" direct outputs, two 1/4" line inputs, two 1/4" auxiliary inputs, stereo 1/4" control room outputs, stereo 1/4" master outputs
Resolution of analog I/O	up to 24-bit/96kHz
Headphones	2 front-panel stereo 1/4" headphone jacks with separate level controls
Footswitch	transport control (1/4")
Digital I/O	S/PDIF (coaxial)
MIDI I/O	in, out, thru
External clock or timecode sync	S/PDIF word clock
Metering	stereo 10-segment meters (switchable to in or out) with clip indicator and peak hold; individual channel green/red signal present/overload LEDs
Bundled software	Steinberg Cubasis AV (Mac/Win) or Cubasis VST (Win), Sonic Foundry Acid Style (Win)



The SeaSound Solo has plenty of connectivity for a small studio. On the left are the MIDI in, thru, and out connectors, the multipin jack that connects the Solo to its PCI card, and a footswitch input, which doesn't do anything yet. The interesting stuff is on the right (L to R): the master outputs, independent control room outputs, auxiliary inputs (which feed the control room and headphone outputs but not the computer), line inputs, and direct outputs and preamp inserts, both of which work in conjunction with the front panel inputs. Oh, and if the signal routing seems confusing, just take a peek at the top of the unit: A complete block diagram is printed there.

The output section, on the right end, has two headphone jacks, each with its own level control. You also have a knob for controlling the output level going to the rear-panel control room output jacks, and another knob for controlling the level of the rear-panel master output jacks. Having separate control over these outputs is ideal: You can turn the control room outputs down right at the Solo panel and not have to worry about microphone feedback, or crank up the speakers without affecting the level going to your mixdown DAT deck.

The rear panel audio connections I haven't yet mentioned are the direct outs and the auxiliary ins. The direct outs receive a post-insert, pre-level-knob signal from the front panel mic/instrument channels. The signal from the aux ins goes to the control room outputs and the headphone outputs — but it can't be recorded into the computer. It would have been nice to be able to switch the aux ins so that they'd replace the line ins and be sent to the analog-to-digital converters.

According to the manual, you might want to use the direct outs and aux ins to listen to yourself with reverb while recording your

vocal dry. Not exactly an essential application, though some vocalists are bound to appreciate it. You could also patch your synth (assuming it's playing the MIDI tracks of your song) into the aux ins, but you'll have to repatch the synth into the line ins before doing your final mix, or else patch your mastering deck into the control room outs, because the aux ins don't feed the master outs.

More seriously, the Solo gives you no easy way to route a single already-recorded audio track to a send/return for processing through a hardware effect. The direct outs can't receive a signal from the computer — only the master, control room, and headphone outs do so. And they'll all receive the mix of all of the computer's audio outputs. To create a hardware send/return, a little repatching of cables and muting of tracks will be required.

In the long run, you'll probably be doing most of your audio work in the computer (in the "virtual studio," as we say) using plug-ins for things like reverb. But when you first buy the Solo, you may still want to use a hardware effects device — either because you've tapped out your bank account and can't yet afford to

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KEY INFO #68

SeaSound Solo

buy any plug-ins, or because you just like the way the hardware unit sounds. This is the point at which the convenience of having a couple of extra jacks on the back for sends and returns would be appreciated.

Here's a tip, though: Both the solo's front panel ins and its line ins are active at all times. The easy way to use hardware effects, then, is to tap the input channel's direct out and patch the effect into the line ins. You can then print the effects to the track while recording (assuming you're confident enough of the effects to want to do that).

We're still not finished with the I/O list. On the PCI card itself are RCA connectors for S/PDIF digital audio I/O. Personally, I would rather have seen these jacks placed on the Solo rack unit. A 1/4" jack labelled "External Controller" is described in the manual as being usable by a "SeaSound Transport or Foot Controller," but SeaSound tells us they're still working out what this is going to do — possibly transport control, or punch-in/out.

Last up are the MIDI in, out, and thru jacks. These allow your computer to communicate with your synthesizer(s) even if you have no other music hardware — again, a definite bonus for the entry-level recordist. The necessary MIDI driver software is installed automatically on both the Mac and PC when you run the Solo installer program.

Software

The Solo package I received came with two limited-edition recording applications, Steinberg Cubasis AV (Mac/Win) and Sonic Foundry Acid Style (Windows only). Both installed without trouble on my PC. According to SeaSound, new Solo units are now being shipped with Cubasis VST (Windows only), a much more powerful program. Neither Cubasis nor Acid comes with printed documentation. Cubasis has a complete manual in a PDF file that can be read in Adobe Acrobat Reader, as mentioned earlier. Acid Style relies on a standard Windows Help setup to explain, in a sketchy way, how it works.

Once I directed the Windows Multimedia Control Panel to use the Solo for audio I/O (a step not mentioned in the printed manual), Acid Style and Cubasis were able to use it for audio recording and playback. Audio timing latency proved not to be a problem: When I recorded an audio track into either program and then

overdubbed a second track, the two tracks played back in sync, even though I was using the Solo's standard Windows multimedia drivers. Solo also ships with ASIO drivers, so if you're using a more powerful audio recorder, you should be set to go.

If you've never used Acid, Acid Style will give you a taste of what you've been missing. Assuming you like the rock loops shipped with the program, Acid Style makes the process of recording and arranging loop-based music

pretty darn easy. In addition to letting you mix and match these loops, it will record and play as many stereo audio tracks as your hard drive and CPU can handle.

Loops can be time-stretched to fit any tempo — but if you're importing a new loop and don't know the tempo ahead of time, you may have more

than a bit of trouble. Not being an Acidhead, I couldn't even figure out how to record a beat loop from an audio sampling CD and then line up Acid's beat grid to match the audio. It can be done, but good luck figuring out the correct steps without a manual.

Unlike stand-alone versions of Acid, the one shipped with Solo provides no waveform editing. You've got enough recording power to whet your appetite, but that's about it.

Cubasis AV is just as limited. Here again, you've got the basics — eight audio tracks and 16 MIDI tracks, with graphic and event editing and basic quantization. But Cubasis AV is so stripped down that it doesn't even give a hint of what Cubase is all about. There's no audio processing, not even EQ, let alone plug-in support. If you're using a Windows machine, skip right to the Cubasis VST installation: You'll get plug-in compatibility and track EQ, among other niceties.

If you're planning to use Solo for recording your music (and why else would you buy it?), I'd strongly recommend budgeting several hundred bucks for more qualified software, especially if your computer is a Mac. You'll need not only an audio editor, but also a better recorder. The bundled programs will get you started, but they're nowhere near as capable as the hardware they're bundled with. ■

KEY INFO #125

Senior editor Jim Aikin is shopping for a new computer to bring his MIDI studio up to date with the latest digital audio toys.

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KEY INFO #139

Digidesign Bruno/Reso

by Mitch Gallagher

REALTIME SYNTHESIS PLUG-INS

TDM-format cross-synthesis/resonator plug-ins

Pros: Fresh sounds. Sidechain input with source monitoring. MIDI clock sync (Pro Tools 5 or higher). Up to 24-voice polyphony.

Cons: Limited control over synthesis parameters. Limited modulation routings. DSP-hungry. Some issues with third-party TDM software.

Bottom Line: The two plug-ins in this package cover a lot of ground. They can turn the audio you run through them into anything from Wavestation-like evolving timbres and clangorous metallic hits to vocoder-like effects and fat synth drones. More than just effects, these plug-ins are closer to virtual synths — a MIDI controller or a sequence track is required to get the most from them. It would be nice to have a few more modulation routings and a deeper control interface for those of us who like to get our hands dirty tweaking parameters, but as they stand Bruno and Reso offer high instant-gratification appeal. A Key Buy for those looking for powerful ways to process existing tracks and create new timbres.

Digidesign, 800-333-2137, www.digidesign.com



\$395

The world of plug-ins is expanding at an ever-increasing rate: Witness, for example, the rash of new offerings at the recent AES show in New York.

Whether you're looking for a plug-in to emulate a vintage device, a processor that applies traditional techniques in new ways, or a virtual synth, there's something out there for you. If your wants and needs fall somewhere toward the "virtual synth" end of the spectrum,

then Digidesign's newly released Bruno/Reso package should tweak your interest.

The Bruno/Reso package consists of two separate plug-ins, cleverly titled "Bruno" and "Reso." Mono, mono/stereo, and fully stereo versions of each are included. The two are similar in many ways, both appearance-wise and functionally (see Figures 1 and 2), but under the hood they're very different beasts. It's a bit difficult to categorize either one; they both have "processor" aspects, but they also can

legitimately be thought of as variations on the virtual synthesizer theme. In fact, as we'll see below, to get the most from these plug-ins, you'll want to break out your MIDI keyboard or whip up a MIDI sequence track or two.

Note that both plug-ins are DSP-hungry. Each requires a full chip on either a DSP Farm or a Mix Core/Farm. The manual states that you can get three instances of Bruno/Reso running on a Mix system. On my unexpanded system, I was only able to get two. A Mix system is recommended; using a DSP Farm will limit your polyphony to eight notes maximum per instance.

Overview Bruno and Reso share a common approach. The basic idea is that audio routed through the plug-ins is used as raw material for creating new timbres. The source audio can be thought of as analogous to the output of an oscillator in a synth. It's what's done with that source audio that distinguishes one plug-in from the other.

Bruno works by slicing the source audio up and recombining the slices either with or without a crossfade between them. You're given control over when those slices are taken, but not much else (at least on the basic synthesis/processing level). Slices can be taken

Fig.1



Fig.2



whenever the source audio crosses a user-selected threshold level, in response to a sidechain input, or in sync with Pro Tools' MIDI beat clock. (The sidechain input allows a second audio source to control when the slice is taken. This source can be either a Pro Tools track/input or a TDM mixer bus.) All three possibilities work well; I was especially happy with the results I got using a drum loop as a sidechain input and when the plug-in was synced up to MIDI clock. (Note that MIDI clock sync requires Pro Tools 5.0 or higher.) Kudos to Digidesign for providing clock subdivisions; while synced to MIDI, the plug-in can create slices in quarter-note, eighth-note, sixteenth-note, triplet, and dotted-note rhythms. You're also given control over how often Bruno crossfades from one slice to the next. This setting is vital to achieving your desired result: The lower the crossfade frequency, the more clearly you'll be able to hear the original, underlying input source audio "switch" from one slice to another. With higher crossfade frequencies, the slices continuously transition, creating an evolving sound. Based on the sounds created with Bruno, one wonders if there's more going on behind the scenes than this. If so, Digidesign is keeping it to themselves. This is the only explanation given for how Bruno works.

Vital Stats

System requirements	Digidesign Pro Tools system (Mac or Windows NT)
Supported platforms	Mac: Pro Tools 4.3.1 or higher, version 5 required for MIDI clock sync; PC: Pro Tools NT version 4.2.5 or higher
Supported host formats	TDM
Version reviewed	1.0
Copy protection	floppy disk authorize
Synthesis technique	Bruno: time-slice generation with adjustable crossfade Reso: harmonic resonance generation
Polyphony	1-, 3-, 6-, 12- or 24-note, depending on voice stacking (using a Mix card; 8-voice maximum on a DSP Farm card)
Voice detuning	Up to ± 50 cents, multi-voice
Envelope generator	ADSR (hard-wired to amplitude)
Filter	Bruno: none Reso: lowpass with cutoff, Q, and envelope follower parameters
Velocity sensitivity	Bruno: gain, detune Reso: resonance, damping, gain, and detune
Sidechain input	yes, with key listen; source can be an audio input channel or a TDM bus
Portamento (glide)	yes
Sync	MIDI beat clock
MIDI I/O	input only, via OMS (included with Pro Tools)

Reso, on the other hand, generates new harmonics based on integer multiples of the fundamental frequency of the raw source audio material. You're given the option of hearing all harmonics (along the lines of a sawtooth wave) or just the odd-numbered

multiples (more like a square wave). You can toggle between the All and Odd harmonics settings using the same control options as those in Bruno: threshold, sidechain, and MIDI clock sync, but there's no option for smoothly crossfading from one setting to


Fig. 1. Digidesign's Bruno plug-in synthesizes new sounds by crossfading between slices cut from the audio flowing through it. Most of the action takes place behind the scenes; the majority of the controls you see are related to performance rather than synthesis parameters. A sidechain input is provided, which can take its input from an audio input channel or a TDM bus. The sidechain input is used to trigger switching between audio slices; a rhythmic source, such as a drum loop, works well for this. Switching can also be initiated when the input signal crosses a threshold level or it can be triggered in sync with a MIDI beat clock. Quarter-note, eighth-note, sixteenth-note, triplet, and dotted-note divisions of the clock are supported. If you'd rather not hard-switch between slices, you can use the Crossfade control, which determines how fast Bruno will move from one slice to another. At higher crossfade frequencies, there's more of a pulsed effect; at slower rates the sound smoothly transitions from slice to slice.

To generate sound, Bruno must be played while audio is being fed through it. Notes can be triggered via the built-in keyboard (which has a fixed velocity of 92) or from a MIDI controller or sequence track. In addition to pitch, the output level of the plug-in and the detuning applied to the voices can respond to MIDI velocity messages. Unfortunately, the amplitude ADSR envelope can't be modulated by velocity information. The Voice parameters determine Bruno's polyphony. Up to 24 voices (think of them as oscillators) are available; polyphony is reduced if you stack them up for fatter sounds.

A handy feature is the Key Listen switch (the one with the little ear icon over it). This control allows you to conveniently monitor the source feeding the sidechain input.

Fig. 2. Reso is used similarly to Bruno, and features many of the same controls (see Figure 1). But it creates sound differently, by generating harmonics from audio fed through the plug-in. You can choose to add all harmonics or just the odd overtones. If you can't make up your mind, Reso can switch between the two choices based on a sidechain input, an audio threshold level, or MIDI beat clock. As with Bruno, quarter-note, eighth-note, sixteenth-note, triplet, and dotted-note divisions of the beat are supported. Switching between the harmonics settings results in a hard switch from one set of overtones to another. When controlled by MIDI clock or a rhythmic source, the result of harmonic switching is an interesting timbral pulsing effect.

You're given control over the amount of resonance added and over a damping factor, which causes high harmonics to decay faster than low harmonics. This lets you contour the "ring" of the overtones to your liking. In addition, Reso features a lowpass filter. You can control the cutoff frequency, the Q (a resonant peak at the cutoff), and an envelope follower, which tracks the dynamics of the plug-in's source audio and applies the results to the filter's cutoff frequency. MIDI velocity can be used to affect resonance, damping, gain, and detune, but not the ADSR envelope or the filter cutoff.

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KEY INFO #246

the other. Reso also gives you a few more timbre-control options than Bruno: The Damping control determines how quickly higher frequency harmonics will fade out relative to low-frequency harmonics. This allows you control over the tone of the harmonic "ring-off" of the timbre, as well as of the overall brightness of the plug-in's output. In addition, Reso provides a lowpass filter with resonance (Q). As an added bonus, the filter's cutoff frequency can track the dynamics of the plug-in's source audio.

Both plug-ins have built-in ADSR amplitude envelopes for shaping their output. You're given a broad range of control. The attack and release times, for example, can range from 0.0 to 5,000ms — enough for many applications. It would be nice, though, if the envelope would respond to MIDI messages. (See below for more on using these plug-ins with MIDI.)

Bruno and Reso also provide portamento (called glide), control over bend range (sets the maximum pitchbend applied with a MIDI controller's pitch wheel), master tune, and voice detune amount. Detune can be modulated by MIDI velocity, as can the plug-ins' output level.

The plug-ins each offer a maximum of 24-voice polyphony. (For me, it was easier if I thought of a "voice" as a sort of synth oscillator.) When none of the voices are stacked or layered, you can have 24 notes sounding at once. But if you start stacking, the plug-in's polyphony will drop. You're given the option of stacking two, four, eight, or all 24 voices, resulting in 12, six, three, and one-note polyphony, respectively. Voices can be detuned up or down by up to 50 cents, and the amount of detuning can be modulated with MIDI velocity. A Spread control is provided in the stereo and mono/stereo versions of the plug-ins, which distributes the various voices across the stereo field; it's a nice broad effect, especially when used in conjunction with some judicious detuning.

MIDI There's an important part of this picture that we haven't discussed yet: MIDI. In order to produce audio at their outputs, Bruno and Reso must be played or triggered. Triggers can come from one of two sources: From the built-in, onscreen keyboard or from a MIDI controller or sequence track. The onscreen keyboard is easiest; just play a note with the mouse and you're happening. The keyboard is polyphonic, and you can set it to "latch" or indefinitely hold any notes you've played. In fact, notes that are latched can be saved as part of a preset and

recalled with it later. This is very cool if you need specific notes held in order to create a specific timbre. Be aware that if you use the onscreen keyboard, you're largely giving up MIDI velocity control over Bruno/Reso's parameters. Notes played with the mouse generate a fixed velocity of 92.

The onscreen keyboard is great for putting sounds together, or if you don't need to play a musical passage in order to get the effect you want. But Bruno and Reso really come to life when you control them from a MIDI keyboard (or other controller) or from a Pro Tools MIDI sequence track. When you do so, both plug-ins become much more synth-like — more like performance instruments. How playable the plug-ins are depends to an extent on the source material you're using. In some cases, you'll get analog synth bass tones that are very playable; in others you'll get evolving washes that are definitely pitched, but that may not necessarily be "melodic" sounds.

Compatibility Digidesign's list of compatible applications is limited. Only one shows up: Pro Tools. But since many people use another program as a front end for the Pro Tools hardware (myself included), I decided to put Bruno/Reso to the test with Emagic's Logic Audio Platinum 4.0.7 and Mark of the Unicorn's Digital Performer 2.61MTS.

The results were mixed. Depending on how you want to use the plug-ins, they may work fine. With both programs, there was no problem processing audio through Bruno or Reso. Beyond basic processing differences emerged, primarily in the area of MIDI support. With Digital Performer, I had a bit of a struggle getting MIDI beat clock-sync to work; eventually I traced this down to Bruno and Reso not automatically showing up as ports in OMS as they do in Pro Tools. You have to go in and update your OMS setup. Unfortunately, this update isn't remembered when you quit DP and restart. You'll have to update OMS every time you want to clock-sync one of the plug-ins in Digital Performer. The other problem was that only one of the plug-ins could be a sync destination at a time; if you want to use both Bruno and Reso simultaneously, one of them is out of luck sync-wise.

Once OMS was updated, Bruno and Reso showed up in Digital Performer's MIDI instrument lists, but Digital Performer insisted they were 16-part multitimbral instruments, which is not the case. Digital Performer also wouldn't let me choose Bruno or Reso as the output

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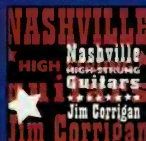


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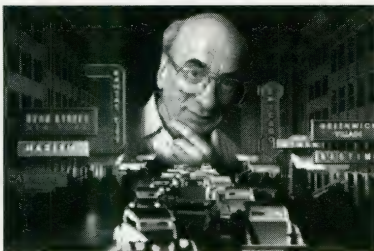
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KEY INFO #245

Digidesign Bruno/Reso

instruments for MIDI tracks (in spite of the fact that they showed up in the pull-down menu). Since this prevents you from "playing" the plug-ins via MIDI, it's a serious limitation. Another serious limitation is that no sidechain inputs were available in Digital Performer.

Logic Audio had an almost complementary set of problems. I was unable to get MIDI beat clock to route to the plug-ins, although this could conceivably have been user error in programming Logic's Environment. However, Bruno and Reso showed up as MIDI objects in the Environment (under OMS), and I could play them from my Korg Wavestation keyboard. It was not necessary to update the OMS setup to get this working; it was handled automatically as it is with OMS running under Pro Tools.

The sidechain inputs to Bruno and Reso worked fine in Logic Audio, but there were two other limitations: I was unable to get Bruno and Reso to load simultaneously into Logic Audio; a TDM error resulted when I attempted to instantiate one if the other was also being used. And no mono/stereo version of the plug-ins was available under Logic Audio. Only mono and stereo versions showed up as available plug-ins.

In Use When I first started fooling with Bruno and Reso, I was impressed with what they were capable of, but I have to admit I just wasn't that excited by them. This feeling changed as I put them to work. I soon discovered that the plug-ins were capable of exciting, fresh sounds, and that MIDI control was essential to making these things rock. Bruno ended up being my favorite, but I found that Reso was much more than an also-ran; it's capable of a wide range of outputs that are especially cool with drums and percussion, as well as on basses and other monophonic tracks as source material.

I can't emphasize enough how important the raw source material is to getting desirable sounds from Bruno/Reso — experimentation is the key word here. I tried the plug-ins on drum loops, exotic percussion tracks, fretless basses, vocals, acoustic and electric guitars, mandolin, brass, and other sources. In virtually every case I was rewarded with interesting new sounds, some more musically useful than others (depending on context), but always very evocative. ■

KEY INFO #126

Mitch Gallagher was recently named the editor of Keyboard's sister publication, EQ. He will continue to serve as consulting technical editor for Keyboard.



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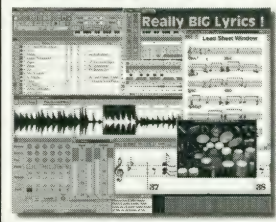
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Cons: No input or output gain controls. Managing levels can be tricky. No BPM display.

Bottom Line: An extremely well designed and constructed gizmo for realtime effects performance.

Electrix, www.electrix.com

\$549



Once upon a time I had a great idea. Take my stomptboxes, rip 'em apart, hook their innards together, and shove it all into a rackmount. My attempt was less than spectacular, as all I wound up with was three really nice Boss effects and a pricelessly obscure ancient Bakersfield pawn shop fuzzbox destroyed beyond all hope of repair.

Thankfully, Electrix has done the job for us and then some with Mo-FX, a multieffects unit that consists of four modules: distortion, flange, tremolo, and delay (in series). The unit

is housed in a strong angled silver cast aluminum enclosure that can either be screwed into a rack or used for tabletop operation.

Mo-FX's front-panel pots are arguably the nicest feeling ones I've had the pleasure to rotate, and the whole works lights up like NORAD during the Cuban missile crisis, which is great for those low-light settings. The back panel sports an impressive array of 1/4" and RCA I/O options.

Each of the effect blocks has a large momentary button to tap the effect in and out of the mix; an engage button acts as an effects bypass. The distortion block is rather subtle as far as distortion units go; it doesn't start to get crispy until the Drive knob is turned halfway. But fear not, Mo-FX can produce some extremely big sounds that nearly annihilated my nearfields.

The speed controls for the flange, tremolo, and delay blocks can sync to tap tempo or incoming MIDI clock. Probably the coolest feature on Mo-FX, though, is the Band selector on each block, which allows you to apply one or any combination of the three preset band-pass filters to each effect block. The chosen frequencies are very musical, allowing you to



flange just the cymbals, for example, while dunking the kick in tremolo. The delay and flange modules sound dark and warm, without a lot of sheen or spaciousness that you usually associate with modern effect processors. Flange in conjunction with tremolo can really get the low end throbbing and pumping.

Another cool feature: All controls send and receive MIDI data so your knob twists and button bashes can be recorded to a sequencer for a repeat performance.

Mo-FX is a wonderful device. Remixers and DJs should take to this thing like conference attendees to free food. The lack of internal patch memory make Mo-FX more of an express-yourself-in-the-now sort of experience, rather than a deep programmable multi-parameter studio tool. This by no means excludes it from studio use. Just watch your levels keep the recorder or sequencer in record ready and start having yourself a good 'ol time. KENT CARMICAL

KEY INFO #127

Apple iBook

Pros: Sturdy, stylish design. Crisp color monitor. Responsive track pad with double-tap and drag support. Comfortable keyboard. Bundled software.

Cons: No FireWire I/O, PCM-CIA slots, SCSI, or audio inputs. Standard 32MB of RAM is insufficient to run most music apps. Lo-fi mono speaker.

Bottom Line: An affordable and attractive laptop, but not equipped enough for some high-powered music software.

Apple Computer, www.apple.com

\$1,599

It's been compared to a clam shell, a toilet seat, and a Hello Kitty purse... but no matter the description, all agree that Apple's iBook is a bonafide smash at the cash register.

What's in an iBook? You get a 300MHz G3 processor, 32MB of RAM (expandable to 160MB), an internal 3.2GB hard drive, an internal 24x-speed CD-ROM drive, an internal 56K modem, a 12.1" color monitor, USB and Ethernet ports, a mono speaker (crap quality), and a 16-bit mini stereo output jack. Sorry,

there are no PCM-CIA slots, FireWire I/O, SCSI, or audio inputs. Boo! If you want to get audio in, you'll have to load pre-recorded audio files from CD or use a USB audio interface. (At presstime I couldn't find any Mac software/hardware combos that recorded audio via USB, but I hear there are products in the pipeline.) Clearly the key to having a good musical experience with the iBook is to figure out ahead of time what your needs/expectations are.

In my case, I bought a blueberry iBook with the intention of running Word, Netscape, and a couple of stand-alone music apps such as Steinberg ReBirth and the Mac version of Mixman. For these purposes, the computer has not disappointed. Once I upgraded the RAM to 160MB, and with a few helpful hints from some tech support folks, I was able to get all of the above programs running smoothly. (ReBirth suffered from garbled audio output at first, but all was cured after I increased the buffer size.)

Where I ran into real trouble was when I tried to install a few more extensive music apps. Using Mac OS 8.6 and an Opcode USB Dataport 32 MIDI interface, I was unable to get Steinberg Cubase and Emagic Logic Audio up and running (for reasons that I don't have space to detail here).



Both developers claim compatibility with OS 9.0, however, which I wasn't able to test prior to presstime. There was one pleasant surprise in my 8.6 tests: I was able to get MOTU Digital Performer 2.61 to run quite well under OS 8.6, along with MOTU's own FastLane-USB MIDI interface.

I'm glad I bought the iBook. It's small, tough, and you should've seen people gawking over it on my last flight. And speaking of flying, let's not forget Apple's cool Airport option — a small flying saucer-like peripheral that allows you to use the iBook for Web surfing and networking without wires. Slick! GREG RULE

KEY INFO #128

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KEY INFO #254

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www.waves.com

Audio-Technica AT849

Pros: Compact and low-profile. Low-cut filter. Versatile. Good stereo imaging.

Cons: Tangle-prone "Y" mic cable. A bit thin-sounding.

Bottom Line: Boundary mics are often overlooked as recordists fill out their mic lockers; with the AT849 it may be time to re-think that situation. If you're looking for an instant, compact, throw-it-up-and-go stereo mic solution that can cover a lot of bases, check this mic out. Experiment with mounting it on various surfaces and using it as a room mic: In almost every situation you'll be rewarded with cool stereo sounds.

Audio-Technica, 330-686-2600, www.audio-technica.com

\$450

Boundary mics capture the direct sound of a source, rather than a blend of the source's reflected and direct sound. They do this by working in conjunction with a surface (or "boundary") which limits sound so it only enters the front of the mic. The size of the surface used as a boundary has a major effect on the sound of the mic.

A large flat surface (such as a wall or the floor) will increase bass response. A smaller surface or using the mic without mounting it on a surface will reduce bass response.

Audio-Technica's AT849 has some unique features: It has a low-frequency roll-off switch, it has a cardioid — instead of the more usual hemispherical — polar pattern, and most important, it's a stereo device. Two elements are mounted within the mic's body; they're condensers, so phantom power is required. The mic's stereo output is mono-compatible but should you need to down-mix it. Depending on the boundary surface the mic is mounted to, frequency response can be as wide as 30Hz-20,000kHz.

The AT849 requires a special cable that splits the mic's miniature five-pin connector out to a pair of standard XLRs. A 25' cable is included. Unfortunately it's of the thin, cheap-feeling variety; expect to spend time untangling it before each use. On the back of the mic are two slots, which allow you to easily mount it to screws driven into a boundary surface.

Guitar Player editor Michael Molenda put the AT849 to work on sessions at his Tiki Town



studios. Whether positioning the mic on the floor, hanging it in front of a guitar amp, or placing it on a music stand for more of an ambient room effect, he was rewarded with an expansive stereo representation of his source audio. When placed on a chair 2' in front of an acoustic guitar, the mic provided an articulate, dimensional shimmer.

Depending on how it's placed, and what it's placed on as a boundary, you'll find the AT849 is slightly thinner-sounding than some mics, with marginally boosted high-mids. This makes the stereo imaging distinct, and directional cues easily discernible.

For a reasonably priced stereo mic solution, give the AT849 a look. It will add a desirable color to your palette, and greatly increase the versatility of your mic collection. MITCH GALLAGHER

KEY INFO #129

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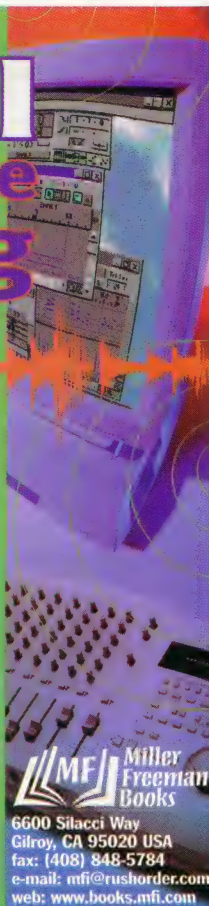
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BIG FISH AUDIO

Big Beat: Megaton Bomb Volume 4

I'm not dumb enough to attempt an authoritative definition of "big beat," but this two-disc, 148-minute package of construction kits, breakbeats, bass lines, synth riffs, and atmospheres certainly captures the hallmarks of the genre: pumped-up mid-tempo grooves, live-sounding drums with lots of room ambience, and toothy synth riffs that often feel like stand-ins for arena-rock guitars. While the tempos here range from 90 to 150 bpm, the majority clock in between 110 and 135. There's little drum 'n' bass hyperactivity or trip-hop narcolepsy — just big grooves of sledgehammer strength and subtlety.

The bulk of this collection consists of 50 construction kits containing between six and 12 elements. Each is introduced in an arrangement that incorporates all the parts, and then the parts appear in isolation. A typical kit might consist of three or four drum loops, a couple of synth-bass figures, some texture/vocal elements, and a set of individual drum hits. The bass tones and synth riffs tend to be dry and ultra-present, contrasting nicely with the boomy, roomy drum loops. Most of the vocal elements are drenched in delay, as are sound effects such as sirens and electronic camera shutter clicks. The atmospheres suggest a fun assortment of hipster styles (a hint of Les Baxter exotica here, a whiff of cool jazz there) without compromising the no-nonsense beats. Senior technical editor Mitch Gallagher noted, "Little things like the subtle jazz sax line in kit #5 really bring these beats to life."

Each set of elements manages to sound like an authentic and near-complete track. The multiple drum loops often layer in surprising and satisfying ways. Sometimes you get a fat-sounding beat followed by an even more blown-out one, perfect for slamming an arrangement into overdrive. Welcome are the many transition and crescendo parts, such as drum-box rolls and

Audio CDs

Dance construction kits plus beats, bass lines, synth riffs, and textures.

SOUNDS:	8
EASE OF USE:	8
DOCUMENTATION:	7
BANG FOR THE BUCK:	7

Big Fish Audio, 800-717-3474,
www.bigfishaudio.com

\$99.95 audio (2 CDs)

long filter sweeps. Most of the tones drip lo-fi grease, from the burning-vinyl breakbeats to the stompbbox-style processing of the riffs and textures. These sound designers are definitely attuned to the bad-ass attitude of current rock-inflected dance music. "Most of these tracks hit hard; they jump out of the speakers and thump the listener," adds Mitch.

These tracks have so much convincing detail that they will probably appeal more to those seeking approximations of, say, a Fatboy Slim sound than to those trying to craft new idioms from scratch. Admittedly, that's a generalization — there are many cool snippets here that would lend themselves to radical reconstruction.



10
Superb. Groundbreaking work.

8-9
Outstanding. Top of the pack.

6-7
Good. Solid and musical.

4-5
Average but usable.

1-3
Mediocre to poor.

But much of this material has so much distinctive processing that it seems destined to work best in its original construction-kit contexts.

In addition to the construction kits, *Big Beat* offers over 200 drum and percussion loops, many of them extravagantly processed. There are also several dozen synth-bass tones (just one pitch per patch), and a grab bag of hits, filtered arpeggios, and atmospheric effects. The solid documentation includes exact tempos and key signatures for all material.

Big Beat's greatest strength — the way it so accurately evokes a specific style — is also its greatest potential weakness. But anyone eager to attain *that sound* almost instantly is likely to dig this expertly realized package. JOE GORE

KEY INFO #130



RAREFACTION

RoVaMaTiC

Rarefaction's ongoing mission: to bring you sampling CDs that other soundware companies probably wouldn't think of. Their latest offering is devoted to sonic textures from the Rova Saxophone Quartet. Rova has been pioneering in improvisatory avant-garde music for more than 20 years, and this CD (also available as a Mac/PC CD-ROM with AIFF files) gives a good taste of what they're up to.

Audio CD or CD-ROM (AIFF)

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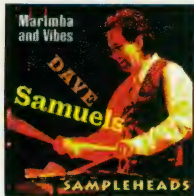
SELECTION:	7
SOUND QUALITY:	9
DOCUMENTATION:	4
BANG FOR THE BUCK:	7

Rarefaction, 415-333-7653, www.rarefaction.com

\$89 audio; \$149 CD-ROM

The textures are quite varied, from sustained almost-tonal chords and surprisingly funky honking, grunting rhythms to the expected squawks and squeals. "Perhaps 'Funnel Trap' should be renamed 'Bong Water,'" Greg Rule commented. "It's a cool combination of breathy sax and gurgling spit noise." A few of the solo lines serve up conventional-sounding licks, though it's hard to be sure what key they're in. Even so, Kenny G has definitely left the building. Thanks to the efforts of producer Thomas Dimuzio, the recording is crisply detailed and virtually dry, so you hear the sax tone warts and all.

Dave Samuels – Marimba & Vibes



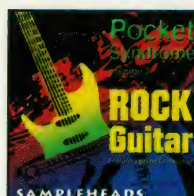
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NEW!

Pocket Syndrome Vol. 2: ROCK Guitar



Groove Master **Bernd Schoenhart** (John Secada, George Michael, Kenny G, Slash, Marc Anthony, Dave Valentin, C+C Music Factory) does it again – this time focusing on rock guitar feels. All new unique "In The Pocket" rock guitar loops and riffs at multiple BPMs and keys per event. All loops are calculated to 1 or 2 bars, ready to load into your sampler or computer. Once again, Bernd performed in more than 20 unique styles, including the slamming "Rock-It-Pocket™", grouped by BPM, ready to give your tracks the "Pocket Syndrome Edge".

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Sound Quality: 9 (out of 10)

KEYBOARD, November 1999

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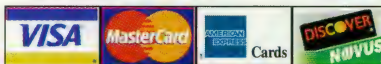
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Will Lee: Ultra Freakin' Bass



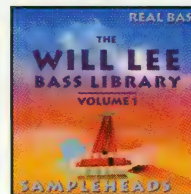
More than 40 minutes of the most "In The Pocket" bass grooves, riffs and loops ever assembled, as performed by Bass Legend **WILL LEE**. Recorded at multiple tempos and keys in an array of styles that will keep you busy making music for a long time. Bonus: the audio version (2-CD set) also includes 5 new basses from the Will Lee Bass Library, sampled chromatically, featuring Will's most requested bass – the Sadowsky

4-string! So we call this audio disc "WLB volume 2". The CD-ROM version is a single disc, just the loops, pre-looped and formatted, ready to eat.

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Whole Lotta Country



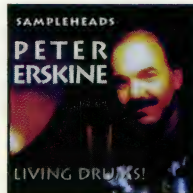
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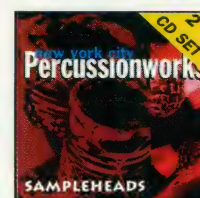
drum kits w/textural, dynamic and timbral variations, Blastix/Rute, Mallets, Head/Rim hits, Multiple dynamics, Right & Left Stickings. Engineered by Allen Sides. **KEYBOARD REVIEW: 5 stars!**

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tempo and style). The loops are some of the most useful tools ever recorded for a sample CD. Sammy Figueroa, George Jinda, Steve Thornton, Emedin Rivera, Mark Johnson, Todd Isler and Mark Johnson invite you to put "their pocket" into your music!

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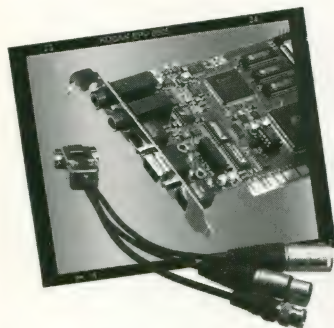
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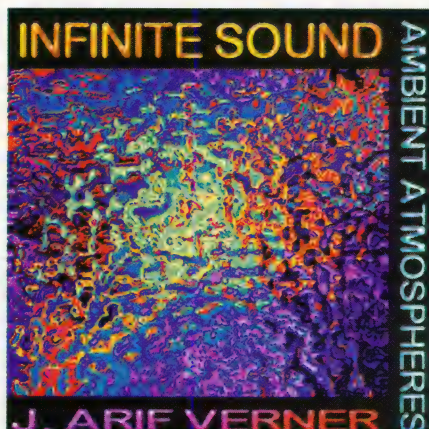
KEY INFO #55

sounds

I especially liked the combination of a mid-range trill with high squeaks and low honks in "Soft Machine." And the two "Laughs" tracks are fun. If you search long enough among the sub-folders, you'll find a track or two of sax key clicks, wind noises with no tone, drunken warbles, and other delights that are harder to describe. As a bonus, the CD contains a few samples from other Rarefaction titles. What's missing, Greg pointed out, are suggested key signatures in the liner notes.

I'm a little at a loss what genre of music to recommend these samples for. They don't really have enough cultural subtext for hip-hop, most are a little too disturbing for ambient, and the drum-and-bass crowd may get impatient at how slowly some of the textures evolve. Suffice it to say, if your music is a little different, *RoVaMaTiC* may be just what you've been looking for. JIM AIKIN

KEY INFO #131



INFINITE SOUND Ambient Atmospheres

In the old days they called it *klangfarbenmelodie* — music made up entirely of sound effects. These days, effects have taken their place side by side with more conventional materials, a combination that can lead to some pretty spectacular mixes. So there's no such thing as having too many effects samples in your library. The classic method for creating these uses synthesizers and digital processors, and that's the route J. Arif Verner chose for *Ambient Atmospheres*.

Most of the sounds on this CD are at least five seconds long, and they range upwards from there. Seven of them last over a minute each. "These samples are very evocative," Greg Rule commented. The overall vibe runs from peaceful to sparky. While a few of the rhythms have a certain tribal urgency, if you're into industrial music you probably won't find much here that's energetic enough to suit you.

The CD includes a little of everything — glassy shimmers, gently tapped cymbals and gongs processed by heavy reverb, flute/chime arpeggios, radio-frequency sweeps and bleeps, an understated rhythm that sounds a little like an ancient motor-operated pump, noise rising forever through a barber-pole filter, squelchy organic rattles — and that's just the stuff that's easy to describe. The seven "Modulation"

Audio CD

Electronic textures.

SELECTION:	8
SOUND QUALITY:	7
DOCUMENTATION:	5
BANG FOR THE BUCK:	6

Discovery Firm, 310-781-1333,
www.discoveryfirm.com

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samples are all at the same tempo, and all seem to have used the same 4/4 drumbeat as source material — but it has been processed to the point where nothing is left of the original but the groove. A few of the 17 "Processed Guitars" tracks are identifiable as having come from a guitar, but most of them are as thoroughly electronic as the rest of the samples.

Much of the CD contains only one sound per track, but tracks 92 through 99 give you from three to seven related samples each, suitable for multisampling. At least, that's the theory; being long, detailed, and in some cases unpitched, they're not the sort of sounds one could ever use to play a keyboard riff. There's also a single "construction kit" track with six individual component samples and a mix — but the latter is so complex and idiosyncratic that it seems more like a commentary on traditional sampling techniques than an actual construction kit.

If I were composing ambient music, I think I'd want to do my own sound effects wherever possible. Much of the interest of the genre comes from subtle variations that evolve within a sound over the course of a minute or two. I'd be reluctant to use too many samples, simply because they're harder to manipulate. That being said, we don't all have huge arsenals of high-quality effects processors. If you want to enhance your sound palette with a sample library that's designed for ambient electronic music, *Ambient Atmospheres* would be a fine choice. JIM AIKIN

KEY INFO #132 ■



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Making Soundtracks, Part 1



Those pesky songs that show up in between your cues — who puts 'em there, anyway?

Any discussion of film scores and film soundtracks would be incomplete without coverage of at least some of the aspects of song usage. Songs have never been as important as they are to today's soundtracks.

As the composer of the film score, you're usually not part of the selection or production process for any songs that may also appear in a film you're working on, though there are exceptions. The producers may want you to arrange a song that is used elsewhere in a film, to base a cue on a theme from a song used in the film, or to create a score that integrates carefully with songs.

Film music budgets are often broken into two parts, one for the score and the other for the licensing of songs. For a song to be acquired for a film, the producers must approach the song's publisher and negotiate a deal. When you start talking about putting songs on a film soundtrack album, things can get quite political. As a composer you're not always insulated from this, but you can coexist peacefully.

The chores of song placement fall upon someone called a music supervisor. I had the opportunity to talk about the process with Chris Douridas, an emerging talent in the world of film soundtrack supervision. He's worked on projects such as *Austin Powers* (1 and 2), *American Beauty*, *187*, *Grace of My Heart*, and many others. Here's what Chris has to say about his work.

Is choosing songs for films experimental, or is it a more planned-out process?

I'm sure everybody has their own system. For me, I just start. You know, you can talk about music all day long, but until you're actually hearing ideas and getting on the same page creatively with the people you're working with, you're not really going to get anywhere. So the first thing I do is to start feeding the director tapes — tapes of things that have come to me or tunes that have occurred to me as possibilities that fit within the world of a particular movie. I'll try to collect a broad range of things so I can outline what I understand about this movie. So the first tape might have ten songs that really stake out the parameters of this film's world, story, and characters. I ask the director to avoid thinking of specific scenes and to come back with feedback as to whether or not these pieces fit in the film's world as he understands it. Then I'll take that feedback, keep the ideas that were good, and discard the ideas that didn't fit. On the next tape I'll hone the selection further, so that by the fourth or fifth tape we're starting to really define the musical world of this movie. We're still not talking in terms of specific scenes or characters. Usually by the third or fourth tape, the director will have hit on some of those songs as being right for a certain scene or character. So without knowing it, we're starting to get the job done.

Do any of the directors you've worked with come to you with specific songs in mind?

It's great when a director has some musical ideas at the start. Often they'll have that from their own reading of the script. If they wrote the script, then they often have musical ideas in their head that may be undeveloped, but essential to what the film is going to be. I use those as launching points to build a musical world around myself and the film.

Do you ever find yourself in disagreement with the director?

I don't think any creative participant in a film project should be shy about challenging the director's preconceived notions. Film is a collaborative medium, so that's part of what I'm there for. Every creative contributor to a film has to speak out and be prepared to challenge ideas they feel are inappropriate or in the wrong direction.

How did you get started doing music supervision in film?

My story is unique — as I'm sure most are. Music supervisor is not something you study to become in school. I was a radio disc jockey for about 15 years — the last nine years in Los Angeles — which gave me a great forum. I did a daily morning music show that presented new music from all around the world. It was only natural that a lot of that great music might find its way into film projects. So I started getting called upon because of the variety of music with which I was familiar.

What was the first film you worked on as a supervisor?

I worked on a film with Kevin Reynolds called *187*, starring Samuel L. Jackson. Prior to that, I was a consultant, first on the TV show *Northern Exposure*, and then on Michael Mann's film *Heat*. In both cases, the directors were fans of my radio show.

What's the difference between a supervisor and a consultant?

A consultant will usually be brought in as a contributing element to the musical vision of the film. They work with the music supervisor to contribute ideas in the pre-production, production, or post-production of the film. It's a more limited role, and it may be focused on a single aspect of the soundtrack.

Tell me a little bit about the interaction between you as a music supervisor and the composer who's writing the underscore for the film. There are certainly situations where it's a toss-up whether a scene will be scored with underscore or a song. Who makes those decisions, how do you get involved, and what sorts of interactions do you have with a film's composer?

It's always a diplomatic process, especially with regard to the relationship between the film composer and the music supervisor. Both essentially provide the necessary musical ingredients for the film. There's a limited amount of space available, and the film composer will want to have the opportunity to get his or her vision across in as many moments as possible. The music supervisor might have other ideas for the same reasons, but initially it's the director's decision. The film composer is usually brought in late in the process, unfortunately. This can make the process even more difficult, since decisions get made before the composer is even on the job.

Next month, Chris and I will talk about the tricky politics of temp scores and soundtrack albums. You'll find more on Chris and soundtracks at www.reelworld-online.com. ■

Jeff Rona is a film and television composer living in Los Angeles, California. He has written music for such projects as Homicide, Chicago Hope, Profiler, The Critic, White Squall, Chill Factor, and many others. For more information about Jeff's work and for copies of many of his scores and videos, go to www.jeffrona.com, or email him at jrona@earthlink.net.

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Bring on the Noise!

An unusual way to “road-test” your mixes

Do you want better mixes? Of course you do — having a decent mix can make or break your music. Even the best tracks won’t come across if they’re not mixed well.

Different people approach mixing differently, but I don’t think anyone has described something as whacked-out as what I’m going to cover this month. Some people will read this and just shake their heads, but others will actually try the suggested technique, and find that they’re crafting tighter, punchier mixes *without* any kind of compression or other processing.

THE MIXING PROBLEM

What makes mixing so difficult is, unfortunately, a limitation of the human ear/brain combination. Our hearing can discern very small changes in pitch, but not small changes in level. You’ll easily hear a 3% pitch change as being distinctly out of tune, but a 3% level change is nowhere near as dramatic. Also, our ears have an incredibly wide dynamic range — greater than 200dB. This is more

than twice the dynamic range of a CD, for example. So when we use only the top 20–40dB of the available dynamic range in a mix, even extreme musical dynamics don’t represent that much of a change relative to the ear’s total dynamic range.

Another problem with mixing is that the ear’s frequency response changes at different levels. This is why small changes in volume are often perceived as tonal differences, and why it’s so important to balance levels *exactly* when doing A/B comparisons. Because our ears hear low- and high-frequency signals better at higher levels, just a slight volume boost might produce a subjective feeling of greater “warmth” (from the additional perceived low end) and “sparkle” (from the increased perception of treble).

The reason why top mixing engineers are in such demand is because through years of practice, they’ve trained their ears to discriminate among minute level and frequency response differences (and hopefully, taken care of their ears so they don’t suffer from their own frequency response problems). They are basically “juggling” the levels of multiple tracks, making sure that each one is at an appropriate level with respect to the other tracks. Remember, a mix does not compare levels to an absolute standard; all the tracks are interrelated.

As an obvious example, the lead instruments usually have higher levels than the rhythm instruments. But there are much smaller hierarchies. Suppose you have a string pad part, and the same part delayed a bit to produce chorusing. To avoid having excessive peaking when the signals reach maximum amplitude at the same time, as well as better preserving any rhythmic “groove,” you’ll probably mix the delayed track around 6dB behind the non-delayed track.

The more tracks, the more intricate this juggling act becomes. However, there are certain essential elements of any mix — some

instruments that just have to be there, and that are mixed fairly closely in level to one another because of their importance. Ensuring that these elements are clearly audible and perfectly balanced is, I believe, one of the most important factors in creating a “transportable” mix (one that sounds good on a variety of systems). Perhaps the lovely high end of some bell sound won’t translate on a \$29.95 boombox, but for the average listener, if you can make out the vocals, the leads, the beat, and the bass, you’ll have the high points covered.

Ironically, though, our ears are less sensitive to changes in relatively loud levels than to changes in relatively soft ones. This is why most veteran mixers initially work on a mix at low levels: It makes it easier to tell if the important instruments are out of balance with respect to one another. At higher levels, imbalances are harder to detect.

ANOTHER OF THOSE ACCIDENTS

The following mixing technique is a way to check whether a song’s crucial elements are mixed with equal emphasis. Like many other techniques that ultimately turn out to be useful, this one was discovered by accident.

My studio doesn’t have central air conditioning, and my in-wall air conditioner makes a fair amount of background noise. One day, I noticed that the mixes I did when the air conditioner was on often sounded better than the ones I did when it was off. This seemed odd at first, until I made the connection with how many musicians use the “play the music in the car” test as the final arbiter of whether a mix is going to work or not. In both cases the back-

ground noise masks low-level signals, making it easier to tell which signals make it above the noise.

Curious whether this phenomenon could be refined further, I started injecting pink noise into the console while mixing. This just about forces you to listen at relatively low levels, because the noise is really obnoxious! But more importantly, the noise adds a sort of “cloud cover” over the music. Just as mountain peaks poke out through a cloud cover when viewed from an airliner, so do sonic peaks poke up out of the noise floor.

APPLYING THE TECHNIQUE

You’ll want to add in the pink noise very sporadically during the process of creating your mix, because the noise masks high-frequency sounds like hi-hat. You cannot get an accurate idea of the complete mix while you’re mixing with noise injected into the bus. What you can do is make sure that all the important instruments are being heard properly. (Similarly, when listening in a car system, road noise will often mask lower frequencies.)

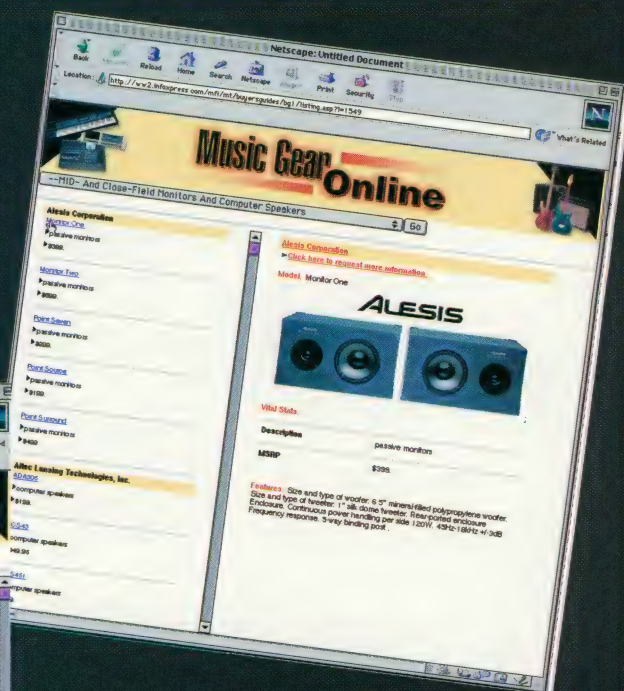
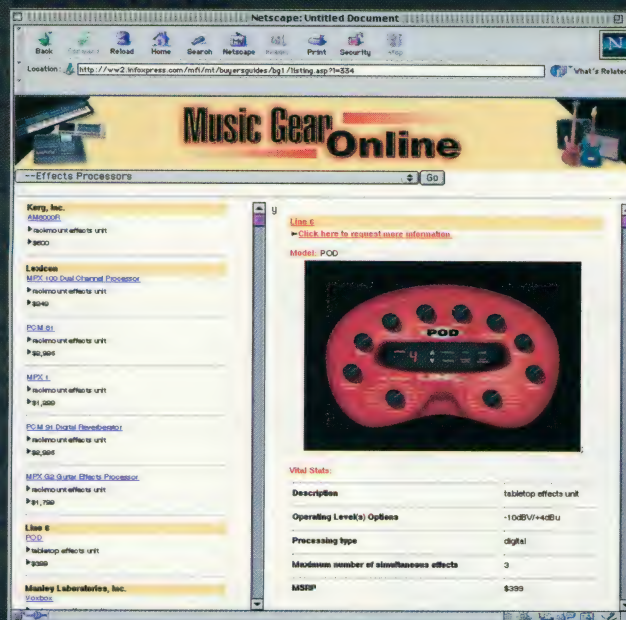
Typically, I’ll take the mix to the point where I’m fairly satisfied with the sound. Then I’ll add in lots of noise — no less than 10dB below 0 with dance mixes, for example, which typically have restricted dynamics anyway. Then I’ll start analyzing what I’m hearing. ➤



I noticed that the mixes I did when the air conditioner was on often sounded better than the ones I did when it was off.

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By the way, pink noise is preferable to white noise for this application. Pink noise is weighted so that there is equal energy in every octave, while white noise is weighted so there is equal energy per frequency. Pink noise has a lower perceived pitch, which makes it more suitable for masking the fundamental frequencies of ordinary instruments.

While listening through the song, I pay special attention to vocals, snare, kick, bass, and leads. (With this much noise, you're not going to hear much else in the song anyway; check out the accompanying audio example at www.keyboardonline.com.) It's very easy to adjust their relative levels, because there's a limited range between overload on the high end and dropping below the noise floor on the low end. If all the crucial sounds make it into that window and can be heard clearly above the noise without distorting, you have a head start toward an equal balance.

Also note that the "noise test" can uncover problems. If you can hear a hi-hat or other minor part fairly high above the noise, it's probably too loud.

I'll generally run through the song a few more times, carefully tweaking each track for the right relative balance. Then it's time to take out the noise. First, it's an incredible relief not to hear that annoying hiss! Second, you can now get to work balancing the supporting instruments so they work well with the lead sounds you've tweaked.

Although so far I've only mentioned instruments being above the noise floor, there are actually three distinct zones created by the noise: totally masked by the noise (inaudible), above the noise (clearly audible), and "melded," where an instrument isn't loud enough to stand out or soft enough to be masked, so it blends in with the noise. I find that mixing rhythm parts so they sound melded can work if the noise is adjusted to a suitable level.

FADING OUT

Overall, I estimate spending only about 3% of my mixing time using injected noise. But often, it's the factor responsible for making the mix sound good over multiple systems. Mixing with noise may sound crazy, but give it a try. With a little practice, there are ways to make noise work for you. ■

Craig Anderton wrote the classic book *Home Recording for Musicians* (available from www.musicbooksplus.com). He has just finished his latest CD, *Sexy World*, which is available in deconstructed form as an *Acid Loop Library*. Send Craig email from www.craiganderton.com.



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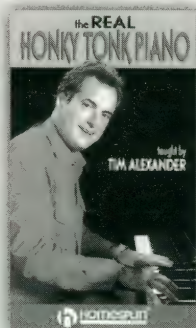
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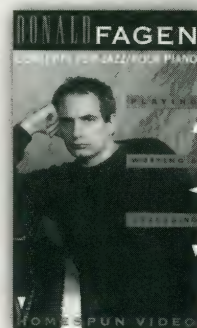
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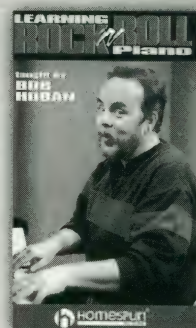
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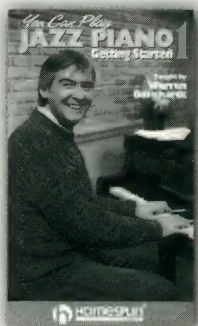
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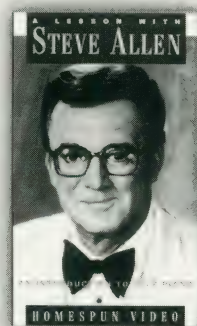
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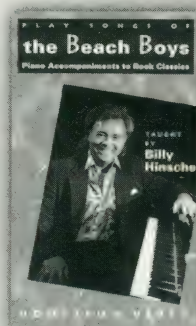
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Ask Doug

That's the FAQ . . . Jack



I receive a great deal of email from loyal readers of Dance Mix. Over the past six months or so, certain themes have been appearing in your letters. Since time and schedule restraints don't always allow me to get into much detail when replying, I thought I'd use this month's column as a forum to address some frequently asked questions in greater depth.

Question: I have some gear (a PC, sampler, synth, etc.) and I'm starting to get into producing dance and techno music. I'm having problems getting different audio samples in time without any flaming, especially drum and percussion loops. Any hints?

Answer: This situation comes up a lot when you're working with audio samples. Believe it or not, beat-matching samples can be troublesome to even the most advanced programmers with the most sophisticated equipment. How do you get them in time (and keep them in time) through the entire track?

There are several different ways to accomplish this, depending on the tools you're working with. But first, it's important to realize that just because two samples are in time with each other doesn't mean they're going to groove together. For example, if you have two full grooves in the mix at the same time, you're inevitably going to have problems with the kick drums. It's very difficult to get two kicks in time with each other without some kind of flaming. For this reason, I try to use only one full groove (with a kick drum) and layer only percussion grooves (without a kick). There have been times when I loved the feel of two full grooves together, and just had to find a way to make it work. I've found that processing one of the samples through a highpass filter to remove the low end works really well. You still maintain the feel of the groove, but the low end doesn't fight with the kick drum on the other sample. You can also accomplish this with traditional EQ simply by rolling off the low end on one sample. In most cases, I don't keep the kick from a sampled loop at all. I'll remove the low end from both grooves and use a separate kick, for more control when I'm programming and mixing.

If you have a computer, many of the newer music software programs like Steinberg's ReCycle and Sonic Foundry's Acid have made the process of syncing samples and beat matching a breeze. With Acid, you import the audio file and enter the desired tempo. That's it! ReCycle asks you to define a threshold, and then it chops the loop into rhythmic subdivisions that can be synced to a sequenced grid, and subsequently sped up or slowed down to the desired tempo.

If you're dealing strictly with a hardware-based sampler, beat matching can be a bit trickier (depending on how old your unit is). If you're not lucky enough to have one of the newer samplers that offer some kind of onboard beat matching, you're going to have to do it the old-fashioned way. Match the tempos of different samples using your sampler's pitch control, raising the pitch to speed up the sample and lowering the pitch to slow it down. When I work this way, I like to transpose the sample up or down in half-steps until it's close, then use the fine-tuning to dial it in. While this method may seem somewhat dated in this age of computer-based music production, let me point out that many amazing dance tracks have been produced this way. It was good enough for our dance music forefathers, and

it still works just fine with a little practice and patience. I revisited this way of sample matching on a recent project when my PC died.

Question: I have a keyboard and a sampler. How can I get those huge synth sounds that I hear on club tracks and remixes without going out and spending a bundle on new synthesizers?

Answer: If you want those fat synth sounds but you have limited synth resources (and budget), your best bet is to layer several sounds together. Horn patches, strings, synth waves, and even drums can all be combined to produce a rich, interesting sound. Layering octaves above and below the prominent pitch can add beef. The downside, of course, is that all of this taxes the polyphony of the keyboard. While this may or may not be an issue for you, you could consider sampling the layered sound you've created; you'll get a lot more mileage out of the synth. You can also use the sampler's effects to enhance your sound. Simple effects like chorus and reverb, for example, can broaden the sound and make it seem wider in the stereo field. A delay matched to the tempo can create different rhythms, or subtly affect the feel. Be cautious with EQ, however, as a thick sound can quickly lose its impact when key frequencies are diminished.

There are many sampling CDs chock full of huge, layered synth sounds just waiting for you to sample. You can also sample from 12" records or CDs if you're very careful. Though you wouldn't want to steal someone else's synth line for the obvious legal and creative reasons, you may be able to find an isolated note to sample. Assign it across the keyboard, transpose it, and play a brand new line. You know you've done a good job sampling when no one is able to determine the source. And with computer sound design tools, there are endless things you can inflict on a sample to make it your own.

Question: I've started making some tracks and I'd like to know the next step I should take. How can I get my music noticed? Should I send it off to labels or should I find a manager?

Answer: The first important goal for the aspiring professional is to get your music heard. This can mean pressing up your own CDs, or sending demos to labels and management companies. When I knew it was time for people to hear my music, I decided to press my own 12" records. I thought it would make a good musical business card, if nothing else. I hoped it would demonstrate to labels and production houses that I could produce a good-quality product from start to finish, and might even get some orders from distributors. (I got a few.) I did a mass mailing to independent record labels, distributors, and production houses, and, to my surprise, I got several responses. That single decision to create a product and send it out has led to every opportunity that I have today.

If you're ready for people to hear your music, just do it. Find a way. You might be surprised at what happens. ■

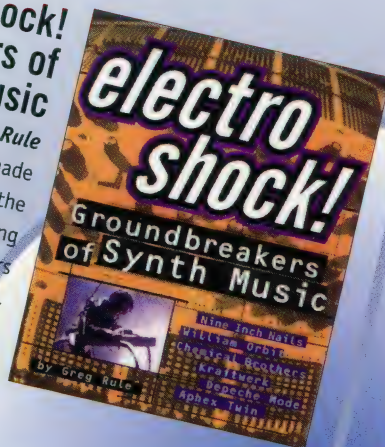
Doug Beck is a producer/remixer/programmer living in NYC. Doug and his partner DJ Boris (collectively Boris & Beck) are busy doing remixes for many of today's top artists. Visit Doug online at <http://dougbeck.home.pipeline.com>.

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By Greg Rule

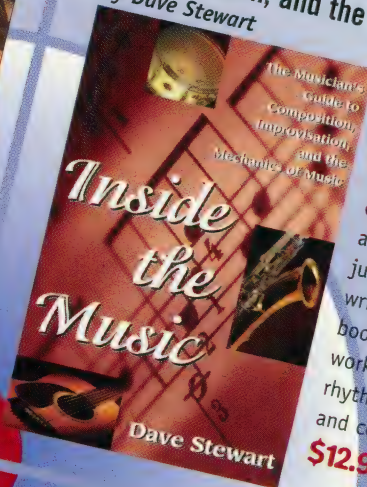
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By Dave Stewart

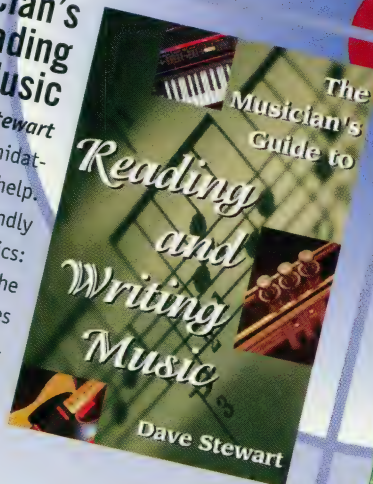
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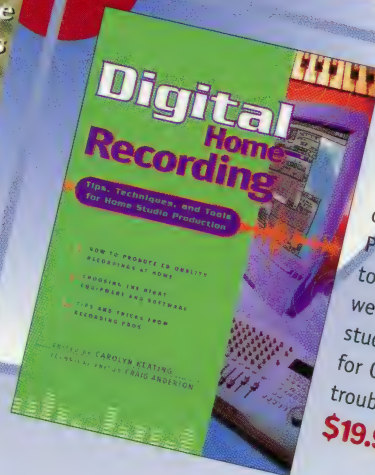
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Edited by Carolyn Keating
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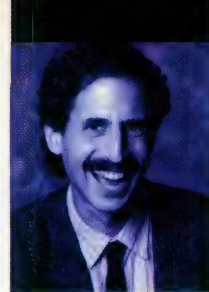
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How to Get Work



Finding work as a composer may be no harder or easier than looking inside your heart

I get a lot of mail from readers. And although I've written about animation scoring, Indian percussion, hi-hat quantizing, horn arranging, torch songs, piano miking, and 99 other very cool things, the fattest chunk of letters asks this question: How do I get composing work? Answer: Open your mind.

Here's a short list of things you could write music for: Your son's school play. Your local car dealer's late-night TV spots. Your temple's holiday service. Your neighbor's funk band. Your uncle's video presentation. Your singer-girlfriend's closing number. Your college radio station's audio logo. Your mother's charity video. Your city's theme song. Your local public radio station's dullest show. Your company's annual pep rally. Your brother's answering machine.

Most of these things don't pay. But a few do, and others may open doors to paying gigs. Often enough, the less a project pays, the more fun it is. Lots of successful artists look back on their earliest low-budget accomplishments as their most satisfying and liberating work — which means you've got some great times to look forward to. Plus, you'll be building a diverse demo reel and gaining a wealth of experience that will help you to. . .

DECIDE WHAT KIND OF COMPOSING IS RIGHT FOR YOU

If you're going to all the trouble and expense of educating yourself, amassing a technological arsenal, and beating the bushes for what might be a long haul, try to pick a career that won't destroy you. Most composers I know work in one or two areas that suit their temperaments. For instance, if you love to write extended choral pieces and hate staying up all night, don't even think of going after jingle work. But publishers of sacred music may pay you to do what turns you on. If you love the theater and never come late, don't go after computer games. But you might write a six-character dinner-theater musical that will pay your rent for the next ten years. Short attention span? Film scoring's not for you, but maybe scoring commercials is. Hate demanding clients? Forget the jingles. Well, forget a lot of work. This is 2000. It's a client-driven century. The point is, you've got to find work that matches your skills and your personality. And you've got to. . .

FIND PEOPLE YOU LIKE TO WORK WITH

If you know you're a difficult person, consider another line of work altogether. As a composer, you're going to be dealing closely with people who need to feel that they can like you. And unless you're a genius — and I'm talking Beethoven — people are not going to hire you unless they like you almost as much as they like your music.

I know a few working composers who have a reputation for being difficult. But the vast majority — like 99 percent — have a reputation for being really easy to get along with. If you think people are mostly jerks, it's time to do a little soul-searching. There's something likable about most people, and if you look hard you'll find it.

Ponder this assertion: If you like your clients, they will like you — and you'll get work. This isn't hypocrisy or even a compromise of principles. It's a happy discovery. You'll create good feelings in your work life when you. . .

CREATE RELATIONSHIPS WITH PEOPLE IN THE INDUSTRY

By now you've done a wide variety of composing projects and realized that there's a type of writing that's up your alley. It's time to start meeting the people in your field. If you want to do jingles, tell everyone you know that you want to do jingles. One of them will have a best friend who works at an ad agency. Take that friend to lunch. Tell him or her your goal. Write a thank-you letter. Phone them every six months. This sort of artificial networking takes a little getting used to, but it's how people get work.

Let's say you want to write songs. Move to Nashville. Play the Bluebird. Identify the writers you like who are a little more experienced than you. Invite them out for coffee . . . and so on.

Ya wanna score films? First, read every Reel World column Jeff Rona ever wrote. Then move to Hollywood. Take scoring classes at UCLA and wow your teacher. Get to know the membership reps at ASCAP and BMI. Put notices up on the American Film Institute bulletin board offering to score student films for free. Have a hot romance with a music supervisor. All these relationships will lead you to your goal, which is. . .

WHAT IS YOUR GOAL, ANYWAY?

Everybody wants to make a lot of money. But if you need to make \$400,000 a year, you'd better get ready for some changes in your lifestyle. You probably won't make a great living composing unless you live in a media center. Does this mean if your spouse and kids won't leave Santa Fe, your musical career is doomed? No. It just means that you might not make a lot of money at it. Is this a bad thing? Not at all. You'll probably have a lot of control over the projects you do. On the other hand, it may mean that you'll need to supplement your income some other way and might never win an Oscar. Do you need national recognition? Do you need to work with the best musicians in the country? Do you need to dig deep inside yourself and create music that no one has ever heard before? Do you need a paycheck? Do you need an unpredictable work schedule?

What are you willing to settle for? What is not up for negotiation? The answers to these questions may change as you grow as a composer, and therefore it's very important to. . .

KEEP YOUR GOAL CLEAR

My experience has been that talent and persistence don't always pay off big. Some people are just luckier than others. I know terrific writers who have never won a major award, and never will. They'll never make a million dollars. And you'll probably never know their names. But they're happy, successful composers. They live in the suburbs of Los Angeles and in funky New York apartments. They have big mortgages and no debt. They play in bands and never perform. And they all love what they do.

You don't have to be an overnight success to be a big winner. Every day that you go into work and write good music is a good day. ■

As a composer and songwriter, Richard Leiter has done projects for a wide variety of clients — NPR, Honda, Carl's Jr., ABC/TV, and Inglenook Wines among them. He writes and performs in California.

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Looping Instrument Tones

Long before beat loops were invented, looping had another essential musical use: stretching the memory in samplers and synthesizers

Many samplers today can be stocked with up to 128MB of RAM, if not more, and it's not unusual to see as much as 24MB of waveform ROM in a sample-playback synth. With such a large block of memory available, memory restrictions are less of a problem for sound designers than they used to be. Early samplers and synths had to get by with 1MB or less of waveform memory. A little sonic trickery was required so that keyboard players would have a reasonably broad palette of waveforms to choose from.

This trickery comes in two flavors — multisampling and looping. Last month we talked about multisampling. To review, in a typical sampler or sample-playback synth a single waveform is assigned to a number of keys. When a key is played, the waveform is transposed up or down in pitch as far as needed in order to sound at the correct pitch. Some waveforms can be transposed by more than an octave before they start to sound unrealistic, while others can only cover a few keys. When you're trying to conserve memory, the further you can transpose a sound, the better. For example, if you only need three Rhodes piano samples to cover a five-octave keyboard range, rather than a dozen samples, you have more memory left over for other waveforms.

Looping is a way of shortening the individual samples so they take up less memory space. Let's say we want to play a violin or trumpet sound from the keyboard. If the players stagger their bowing changes in order to blend the sound, a violin section can sustain a single note for an hour. Likewise, a trumpeter who can do circular breathing can sustain a note for several minutes. But since we're working with limited memory, we can't very well afford to create a string section or trumpet multisample in which each note lasts even ten seconds, let alone three or four minutes. (NemeSys GigaSampler,

a software-based sampler that streams samples from hard disk, essentially bypasses this limitation.)

The solution is to take a short section of the violin or trumpet sound and loop it. When a looped sample is played from the keyboard, it will continue sounding until the key is lifted. A sample that's half a second or less in length can sustain until the cows come home.

This isn't a perfect solution. The problem is, a loop always sounds like a loop. You're hearing the same chunk of audio over and over and over without the slightest variation. When you listen to a real string section or trumpet sustaining a note, on the other hand, there are always changes in the sound, however tiny. These changes are part of what makes the sound "human." The big challenge in looping instrument sounds for keyboard playback is how to make loops that sound good. (What do I mean by "good"? We'll get into that next month.)

Attack Transients

The most easily identifiable portion of an instrument's sound is often the first 1/10 second or so. This part of the sound generally contains some complex acoustical behavior as the resonating system (a violin string, for example) moves from a state of rest to a state in which it's vibrating. The general term for the elements of a sound that are rapidly changing is *transients*. So the audio in the first part of a sample of an acoustic instrument is often referred to as the *attack transients*.

If we loop the attack transients themselves, we'll hear a stuttering, machine-gun-type sound as the attack is played back over and over. While cool for a special effect, this doesn't correspond to how instruments (with the exception of a mandolin playing a tremolo) sound in the real world. For realism, what we want to do is create a loop that begins *after* the attack transients, when the sound of the instrument has settled down to a more or less steady state (see Figure 1). This will give us a smoother-sounding loop.

Sounds easy enough. In the real world, though, looping is an art, not a science. Many things can go wrong: The loop may contain little ticks or thumps that make it grindingly obvious. It may be so smooth that it sounds artificial. Or the transition between the attack transients and the loop may be too abrupt. Next month we'll reveal some of the tricks professional sound designers use for creating loops that sound smooth, yet lifelike. ■

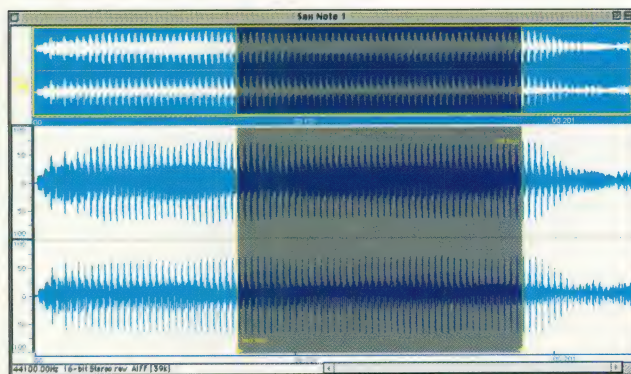


Fig. 1. A single saxophone note from the RoVaMaTiC sampling CD from Rarefaction (reviewed on page 114), as it appears in BIAS Peak. The beginning of the note, on the left, contains the attack transients. The highlighted portion of the waveform is fairly steady-state, making it suitable for looping.

Jim Aikin's first computer game — no sound, no graphics or animation, strictly text — has recently been released as freeware. The game is called Not Just an Ordinary Ballerina. Look for it in the Interactive Fiction Archive at <http://ftp.gmd.de/if-archive/games/inform>; the filename is ballerina10x.z8, where "x" is a digit corresponding to the release number. The interpreter software needed to play the game — on just about any platform you can think of — is at <http://ftp.gmd.de/if-archive/interpreters-infocom-zcode>. If you've never played interactive fiction before and can't figure out how to get up and running, feel free to email Jim at jaikin@mfi.com or jaikin@pacbell.net.

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The Ondes Martenot

Groundbreaking electronic instrument from France



You probably know about the theremin, introduced in 1917 by Leon Theremin. It's played by waving your hands in the air. Another monophonic instrument from the same era, the Ondes Martenot, used the same sound-generation circuitry as the theremin — two high-frequency heterodyning oscillators. The Martenot never became as famous, even though it's more user-friendly for pitch accuracy.

"People were amazed by the theremin," says David Kean, curator of the Audities Foundation (see *Keyboard*, Oct. '97). "The idea of waving your hands around in proximity to antennae to control volume and pitch was very provocative, but it was very difficult to play.

"Maurice Martenot took it upon himself to make his instrument, also known as the Ondes Musicales, interface with human beings a little better. His first instruments had a continuous, looped wire ribbon that spanned a painted keyboard. You wore a small celluloid ring on your index finger and moved the ring to whichever key you wanted to play. A metal strip alongside the ribbon had chromatic indentations and extrusions that provided tactile feedback for where you were on the keyboard."

There was a glissando between notes when you used the ribbon. "Martenot considered this a flaw, because he wanted the instrument to be applicable to orchestral works. He later added a small keyboard so you could play either the ribbon or the keys. You can introduce vibrato by moving a key from side to side." Newer Martenots allowed the ribbon and keys to be used together.



The top photo shows a 74-key Ondes Martenot with its diffusers — clockwise from lower left: the Haut-parleur, Palm, and Métallique. The bottom photo shows a close-up of the Martenot's ring-controlled ribbon, keyboard, and pull-out control panel. This Martenot was donated to the Audities Foundation by the Siday Foundation.

Although the theremin and Martenot used essentially the same sonic circuitry, the latter sounds different. "Heterodyning oscillators produce a dirty sine wave. In order to produce a richer sound, Martenot would overdrive the circuit to introduce more upper harmonic content, which can then be filtered."

Martenot's instrument also produced a wide range of timbres. "With a theremin, the user doesn't have any timbral control. The Martenot has fixed filters that allow a person to choose a tone, using typical organ terminology of the time. The filter buttons on the unit I have are labeled 'Wave,' 'Hollow,' 'Gambe,' 'Nasillard,' 'Octaviant,' and 'Tutti.' There's also a knee lever underneath that allows continuous timbral control."

Furthermore, Martenot designed unique sound projectors called "diffusers." Besides a familiar loudspeaker known as the Haut-parleur, there were the Palm and Métallique. "The Palm has a resonating body with a sound hole. On the front and back are 12 strings, which are attached to a transducer. Inside the polygon-shaped Métallique is a suspended gong that's

driven by a transducer. The Palm's body and strings and the Métallique's gong resonate in sympathy with the note being played.

"The Ondes Martenot is one of the most sensuous instruments I've ever put my hands on. Its volume is controlled by stepping on a leather bag that has a carbon-impregnated sponge inside; more pressure increases the density of the carbon and creates less resistance. This and the metal indexing plate for the ribbon are just wonderful interfaces. If you surround yourself with the various diffusers, it's astounding!

"Martenot designed this thing to be played by symphonic musicians, and some 600 pieces in classical repertoire were written for it by composers including Olivier Messiaen, Darius Milhaud, Maurice Jarre, André Jolivet, Edgard Varèse, and Pierre Boulez. The most striking and famous composition that used the Ondes Martenot was Messiaen's *Turangalila Symphonie*.

"It's very interesting that the Martenot caused enough of a splash that classical composers troubled themselves to write for it. That doesn't happen any more. When was the last time you saw the markings on a modern piece of music for the Nord Lead?" ■

A revised edition of senior associate editor Mark Vail's *Vintage Synths* book is due in the first quarter of 2000.

Vital Stats

Produced: Conceived by Maurice Martenot (1898-1980) in 1918, introduced in Paris in 1928, and hand-made by Martenot until his death.

Total number manufactured: Audities Foundation curator David Kean estimates about 300.

Insider information: Kean says, "The Ondes Martenot spawned a whole new class of instruments: the Ondioline from Georges Jenny, Raymond Scott's Clavivox, Constant Martin's Clavioline, and the Hammond Solovox."

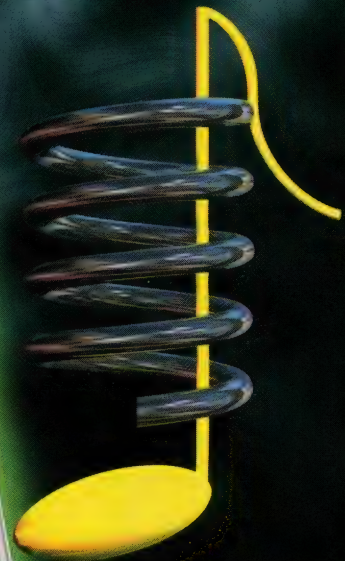
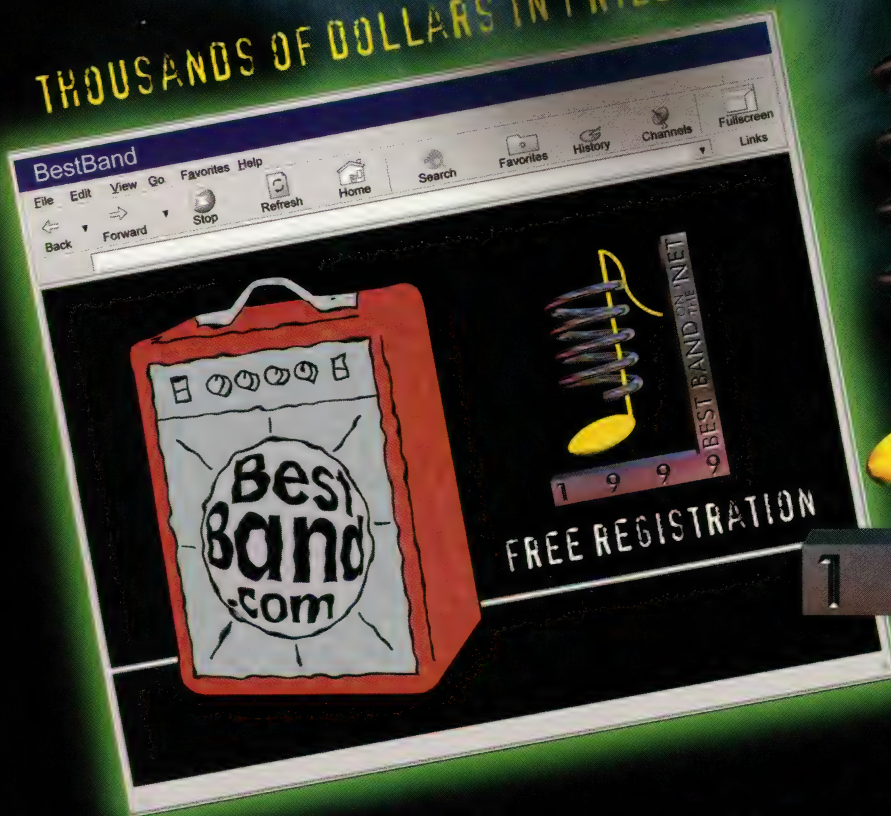
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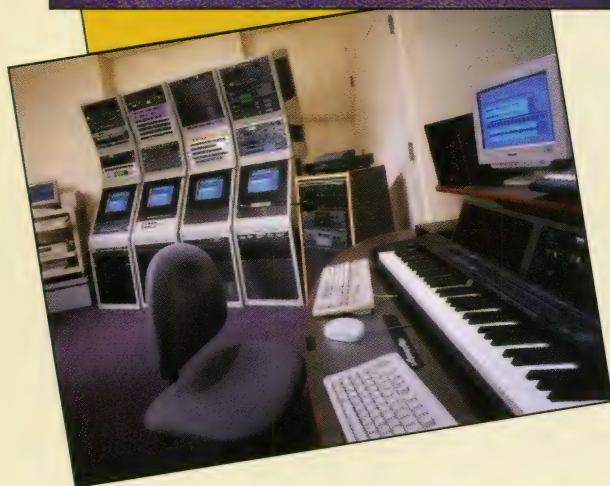
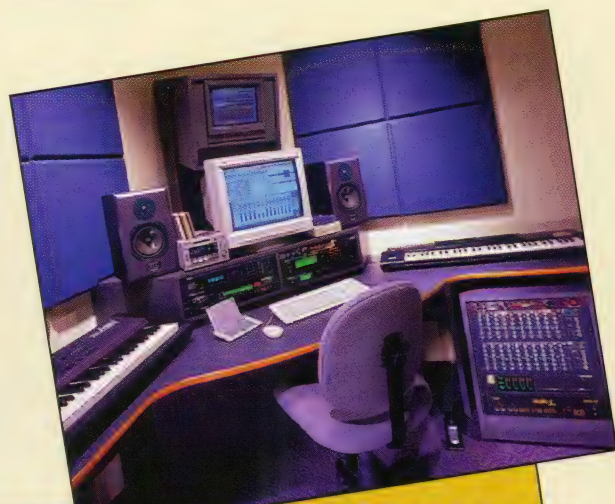
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- 10-voice polyphony and Unison function for even fatter analog sounds reminiscent of older analog synths
- External audio synthesis allows for processing external audio sources using synthesizer filter, amplifier and multi-effects for very unique sonic possibilities.
- Powerful onboard Voice Modulator allows external Mic/Vocal/Instrument input to be processed in realtime using one of three unique modes: Formant Filter, Filter Bank, & Vocal Morph Control



- 3 independent onboard effects include Delay, multi-effects like Chorus, Flanger & Distortion, & Tone Control
- Onboard Motion Control remembers all slider and knob movements for hands-free playback
- Onboard Arpeggiator and realtime phrase sequencing
- Bank & Number buttons, Preview functions, & dedicated MIDI remote keyboard in
- SmartMedia slot accepts external 2MB and 4MB SmartMedia cards for unlimited pattern and patch storage and direct pattern playback

JV2080 64-voice Synthesizer Module

Roland resets the standard with the incredibly expandable JV-2080 64-Voice Synthesizer Module. This amazingly powerful package offers unprecedented expandability, digital signal processing, and remarkable operational ease, all housed in a 2-unit rack-mount design.



FEATURES-

- 64-Voice polyphony / 16-part multitimbral capability.
- 8 slots for SR-JV80 series expansion boards.
- 3 independent effects sets plus independent reverb/delay and chorus.

- 6 outputs, Main Stereo and 4 assignable.
- NEW Patch Finder and Phrase Preview functions for easy access to the huge selection of sounds.
- Large backlit graphic display
- Compatible with the JV-1080, XP-50, and XP-80.

SR-JV80 Series Expansion Boards



Roland's SR-JV80-Series wave expansion boards provide JV and XP instrument owners a great-sounding, cost-effective way to customize their instruments. Each board holds approx. 8Mb of entirely new waveforms, ready to be played or programmed as you desire.

Boards Include-

Pop, Orchestral, Piano, Vintage Synths, World, Super Sound Set, Keys of the 60's & 70's, Session, Bass & Drums, Techno, Hip-Hop, Vocal and Asia Collection, Special EFX and Orchestral II.

MC-505 Groovebox

The MC-505 groovebox builds upon the success of the MC-303 as a self-contained, retro-styled dance music sequencer and sound module with newly upgraded sounds and powerful, futuristic features. Among these new features are the revolutionary D-Beam controller and a MegaMix function for intuitive realtime mixing of beats and patterns-making the MC-505 a DJ, hip-hop, techno or dance music artist's dream come true.

FEATURES-

- 64-voice polyphony, steeper filters, ADSR envelope for editing sounds, powerful effects.
- 714 onboard dance music patterns developed by cutting edge sound designers worldwide.
- 512 built-in sounds, 26 rhythm sets
- Three independent, synchronized effects processors
- Powerful onboard Arpeggiator



- SmartMedia slot accepts external 2MB and 4MB SmartMedia cards for unlimited pattern and patch storage and direct pattern playback

ALESIS QSR 64-voice Synth Module

The QSR provides true 64-voice polyphony, and a huge sound library that is constructed of 16-bit linear samples. With powerful computer and digital audio interface capability, built-in 4-bus Multi-effects and expressive performance features, there is sure to be a QSR synth that's right for you.

FEATURES-

- 16-bit 48kHz sample ROM
- 64 voice polyphonic
- 512 preset, 128 user internal program memory
- 400 preset, 100 user mix memory
- RS422, RS232 port formats
- ADAT interface*
- 16MB internal, 16MB expansion memory (32MB total possible)*
- 4 outputs (2 main, 2 aux)*



ALSO AVAILABLE:

QS6.1 - 61 keys, synth action

QS7.1 - 76 keys, synth action

QS8.1 - 88 weighted keys

Sound Bridge Sample management software is available for Mac or PC, allowing you to import, save, and playback almost any sample type using your Alesis QS synth.

*Available on QS7.1 and QS8.1 only

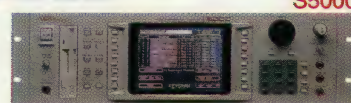


S5000 & S6000

Two new radically redesigned samplers from Akai offering more power, greater speed and ease of use than ever before. DOS and .WAV file disk and sample format is used allowing seamless swapping of files between the sampler and your computer.

FEATURES-

- Up to 256MB of RAM (8MB Standard)
- 64 note polyphony expandable to 128 w/ VOX64 upgrade
- 2 SCSI ports, BNC wordclock input standard
- Large backlit 320x240 LCD display (removeable on S6000)
- 8 outs expandable to 16 w/optional IB-S508P (included w/S6000)
- Optional IB1616A Adat interface, EB20 20-bit multi-effects

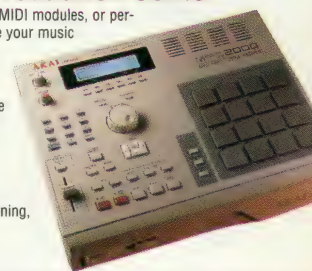


MPC2000 MIDI Production Center

Whether your producing rap or hip-hop, sequencing a rack of MIDI modules, or performing live, the MPC2000 gives you powerful tools to make your music shine. Its the NEW MPC!

FEATURES-

- Large 248 x 60 LCD Graphic display
- 64-track, 100,000 note sequencer with linear drum machine style programming.
- 16-bit, 32-voice stereo sampler
- Standard SCSI interface
- Soft keys, Data/Digit wheels, cursor control and more.
- Keypad for directly entering sample points.
- Note variation slider gives you realtime control of any sound's tuning, attack, decay, or filter frequency.
- Floppy Disk Drive
- Powerful expansion options.



E-mu Systems, Inc.

E4XT ULTRA Professional Sampler

The Emulator legacy continues with the new ULTRA series from E-mu. Based on the EIV samplers the new 32-bit RISC processing of the E4XT guarantees faster MIDI response, SCSI, DSP and sampling.

FEATURES-

- 128 voice polyphony • 64mb RAM (exp. to 128)
- 3.2GB Hard Drive • Dual MIDI (32 channels)
- 24-bit effects processor
- 8 bal. outs (exp to 16)



- Word Clock & AES/EBU I/O • EOS 4.0 software
- 9 CD ROMs over 2GB snds
- Optional Adat card offers 8 ins/ 16 outs

AUDITY 2000



This sample based synth module has over 640 sounds. It combines advanced synthesis capabilities with powerful rhythmic generators and realtime controllers that allows you to create an unlimited number of unique sounds and rhythmic sequences.

FEATURES-

- 12th order resonant modelling filter
- 16 channel, fully synchronizable Rhythm Pattern/Arpeggiator
- 640 ROM presets/ 256 user presets
- 24-bit dual stereo effects processor
- 6 audio outputs
- Stereo digital output S/PDIF
- 16-part multi-timbral
- 32 voice polyphony
- Expandable sound ROM
- 4 realtime control knobs

PROTEUS 2000



The new heir to the Proteus legacy has arrived with polyphony and expansion capabilities never heard of before from any other sound module. Over 1500 presets ranging from lush, pristine acoustic and electric instruments to some of the deepest synth patches imaginable.

FEATURES-

- 128 voice polyphony
- 32MB of RAM expandable to 128MB
- 32-bit processing
- 32 MIDI channels
- 1024 presets and 512 user presets
- 12 front panel realtime controls
- 24-bit dual stereo effects processor
- SoundNavigator allows you to easily find the right preset
- S/PDIF digital output



ELECTRIBE EA-1 & ER-1

Analog Modeling Dance Tools

Two analog modeling synth boxes that create phat, rich grooves with versatile hands-on control and pattern based sequencing. Both units have a capacity for 256 patterns and 16 songs, have built-in effects and allow you to input external audio sources for realtime processing. As well, both units have tap tempo and MIDI clock and are controllable from an external sequencer.

The EA-1, Analog Modeling Synthesizer allows you to create 2 part sequenced phrases. A plethora of filter and dynamic effects are recordable in realtime.

The ER-1, Rhythm Synthesizer allows you to compose your own analog style beats with deep realtime control of effects and oscillators.

EA-1
Analog
Modelling
Synth



ER-1
Rhythm
Synth



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AUDIO SOFTWARE & PLUG-INS

SONIC Sound Forge 4.5



FOUNDRY®

Sound Forge 4.5 is professional editing software for Windows that contains an extensive set of audio processes, tools, and effects for manipulating audio. Features a built-in batch converter, a powerful spectrum analyzer, and an advanced loop editing toolset with support for Sonic Foundry's 'ACID' (see below). This diverse feature set lends Sound Forge to multiple applications including music production, multimedia development, sound design, audio for the Internet, broadcast production and sound analysis.

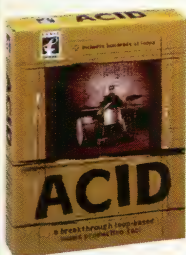


ACID Real-Time Party on the PC!

Sorry for the hype intro, but we have to let you know that this is NOT just another sequencer program with a few minor tweaks, this is the newest, hippest thing to come out in a very long time. ACID allows you to play .WAV, .AIFF and other sound files together matching their pitch and tempo in realtime. You've got to see it to believe it!

FEATURES—

- Make changes to tempo and pitch on-the-fly.
- Match loop tempo and pitch to a project in realtime
- Multiple track looping and editing
- Volume, pan and effects envelopes per track
- Master or slave to SMPTE timecode
- Works on Windows 95 & Windows NT systems

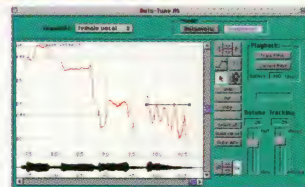


ASK US ABOUT
SONIC FOUNDRY's
.WAV FILE
LOOPS FOR ACID
LIBRARIES ON
CD ROM



Auto Tune Plug-in For Mac or PC

Intonation correcting multi-platform plug-in for Mac and PC considered to be the "Holy Grail of recording" by Recording magazine. Auto-Tune corrects pitch and intonation problems on voice and solo instruments without distortion or artifacts. Two modes of operation include Automatic where pitch is continuously compared to a user selected scale and Graphical mode offering more precise control allows you to draw specific target pitches. Compatible with TDM, VST MAS and standalone on the Mac and DirectX or DAL V8 on the PC.



Native Power Pack

Uses the CPU of your Mac or PC to provide top quality effects processing for recording, mixing and multi-media applications. Compatible with many popular audio editing software programs, the NPP provides EQ, Reverb, Compression, Gating, Stereo Imaging and the incredible L1 Ultramaximizer mastering peak limiter. It also includes Wave Convert, a stand alone application that batch converts formats, bit-depths & sample rates for the loudest, cleanest multimedia files available. A must have for recording engineers & internet designers alike.



Native Power Pack II

The all new Native Power Pack II is an entirely different plug-in collection than the original Native Power Pack. Bass-enhancement, de-essing, vintage compression/expansion and EQ are all provided, and can be used with or without the original NPP. You can also upgrade from either NPP or NPP11 to the Native Gold bundle for the complete Waves experience, and like the earlier NPP, the NPP II requires no extra DSP!

ALSO AVAILABLE - THE NATIVE GOLD BUNDLE:

Includes all of the NPP I & II and Native Pro FX plug-ins. NPP I & II owners can even upgrade to the Native Gold bundle for the complete Waves experience, and like the earlier NPP, the NPP II requires no extra DSP!

TC | WORKS ULTIMATE SOFTWARE MACHINES

TC Native Reverb Plug-in For Mac or PC

From the company that brought you the Ultimate Sound Machines such as The Finalizer and M2000 wizard comes TC Native Reverb. A true TC-quality plug-in for DirectX and VST compatible applications. Packed with features in a familiar hardware style user interface. Room presets include Cathedral, Church, Hall, Room.

PARAMETERS—

- ROM Preset • Input, Output Level & Mix •
- Decay Time • Room Size
- Room Shape • Diffusion
- Color • PreDelay



SOUNDCARDS

The recent proliferation of computer based digital audio workstations (DAWs) is enough to make even the most seasoned audio professional's head spin. Is it compatible with my software? How will it interface with my current gear? Does it have the I/O I need. How about expandability? B&H has the answers. We have a wide selection of the most popular digital audio cards and systems available to fit your budget and needs no matter how big or small.

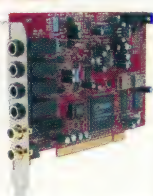
Digital AUDIO LABS

Card Deluxe 24-bit/96kHz Audio Card

From the company that's been bringing sonic excellence to the Windows platform for nearly a decade comes the affordable Card Deluxe. It's a half length, no compromise, 24-bit/96kHz PCI card compatible with today's cutting edge production software. You can even chain multiple cards together for multiple sample accurate I/O's. Available now for Windows with support for the MacOS coming soon.

FEATURES—

- 8 to 24-bit resolution
- 22 to 96kHz sampling rate
- 2 channel 1/4" TRS balanced analog I/O
- Coaxial S/PDIF digital I/O • Full duplex
- +4/-10 balanced/unbalanced operation
- 4 channel operation using both analog and digital I/O
- Slave multiple Card Deluxes to single sample clock using DAL's WavSync drivers
- Windows 95, 98 and NT drivers
- DirectX support

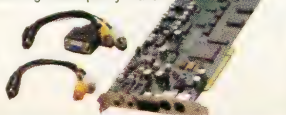


12/12 I/O Multi-channel PCI Audio Card

The 12/12 I/O card helps bring the price of full function multi-channel computer based recording to a point that just about anyone can afford. It features 12 inputs and outputs configured as 2 analog I/O's, a S/PDIF I/O and 8-channel ADAT optical I/O. All I/O's can be used simultaneously for maximum flexibility. Compatibility with most Digital Audio Software on the market and outstanding sonic quality make the 12/12 I/O a great choice for project studios and multimedia pros.

FEATURES—

- Total of 12 ins & outs, all can be used simultaneously.
- 44.1 and 48kHz sample rates
- 20-bit enhanced dual bit
- Inputs, 18-bit outputs.
- 20-20kHz frequency response
- Compatible with any PCI Macintosh or Windows computer



ToolBox PCI Digital Audio Bundle For Mac or PC

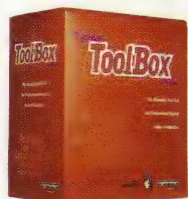
When you need professional features at an affordable price, the Digidesign ToolBox delivers a great combination of software and hardware for Mac or PC. Based around Digidesign's AudioMedia III a 16-bit audio card with stereo RCA inputs, 1 bit 128x oversampling A/D and 18-bit D/A converters as well as coaxial S/PDIF digital I/O. This system is ideal for personal and project studios, radio broadcast applications, and multimedia audio production.

ToolBox For Mac Includes:—

- Includes AudioMedia III card
- Pro Tools 4.x recording/editing software with playback support for up to 8 tracks of audio
- D-fx AudioSuite Plug-Ins (Reverb, Delay & Modulation Effects)
- D-fi AudioSuite sound degeneration Plug-Ins
- Bias Peak Le 2 track editing software

ToolBox For PC Includes:—

- Includes AudioMedia III card
- Session Software recording/editing w/ support for playback of 8 tracks of audio • Logic Audio AV MIDI sequencing/ audio software
- Sound Forge XP 2 track editing software • ACID ROM loop based audio sequencer allowing you to dictate the pitch and tempo of any .wav file

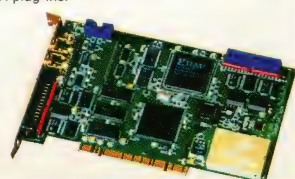


MIXTREME PCI Digital Audio Card

A flexible Windows based audio card built around a dual TDIF connector. Ideal for connecting to a digital mixer, ADA88 compatible multitrack recorder or the SS810-2 or SS810-3 breakout interfaces available from SoundScape. Includes Mixtreme V2 mixer software. The PCI card relies on its own DSP to handle mixing and effects which greatly reduces the latency associated with Native or DirectX plug-ins.

FEATURES—

- 16 channel, 24-bit digital I/O via 2, 8 channel TDIF (Tascam Digital Interface) Connectors
- Wordclock/SuperClock In/Out (RCA connectors)
- Optional S/PDIF and Video Sync daughter boards
- Motorola 56301 DSP chip for mixing and effects
- ASIO and Multimedia Drivers for Windows 95/98 and NT4
- Multiple card support for up to 64 channels of I/O
- OPTIONAL: SS810-2, ADAT to TDIF Converter and SS810-3, 20-bit Analog to TDIF converter





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COMPUTER SOFTWARE & HARDWARE



Digital Performer 2.6

MOTU has already shipped their second major update of Digital Performer this year, with a relentless stream of new advanced features, like sample-accurate editing, sample-accurate sync and MOTU's innovative RAM-based loop recording tool called POLAR. Digital Performer is packed full of features you won't find anywhere else:

FEATURES-

- Sample-accurate waveform editing
- Includes over 50 real-time MIDI & audio effects plug-ins
- POLAR window - Interactive audio loop recording the way it should be
- 24-bit recording and editing
- 32-bit native effects processing - incredible sounding EQ and other FX
- 64-bit MasterWorks™ Limiter and Multiband Compressor plug-ins included
- Advanced waveform editor - it's like having a \$400 stereo editor built-in!
- Sample-accurate - the most reliable editing and tightest sync you can get
- OMF export - transfer your entire session, crossfades and all, into Pro Tools
- Samplers window - drag & drop samples between your Mac and your Sampler!

- PureDSP™ stereo pitch-shifting and time-stretching
- Unlimited audio tracks, real-time editing, full automation and remote control
- QuickTime digital video support, and much more
- Compatible with Pro Tools/24, the MOTU 2408 and today's other popular systems
- Digital Performer is an entire recording studio inside your computer



2408 Hard Disk Recording System



The new Mark of the Unicorn 2408 is turning the industry upside down! No other system in its price range gives you performance like this, with a full simultaneous 24 inputs and outputs on a custom designed VLSI chip that is dedicated to quality I/O. The 2408 is 24-bit compatible and you can link up to three units together for almost unlimited recording capabilities.

FEATURES-

- 7 banks of 8 channel I/O: 1 bank of analog, 3 banks of ADAT optical, 3 banks of Tascam TDIF, plus stereo S/PDIF.
- Custom VLSI chip for amazing I/O capabilities
- Connect up to three 2408 units to your computer for a total of 72 input and output connections.
- Format conversion between ADAT and DA-88
- 20-bit A/D and D/A converters on analog ins & outs

- 24-bit internal data bus for full 24-bit recording via digital inputs
- Standard S/PDIF I/O for digital plus an additional S/PDIF I/O for the main mix
- Sample-accurate synchronization with ADATs and DA88s via an ADAT SYNC IN and RS422
- Includes a complete waveform editing program for Power Macintosh.
- Will grow as your computer grows.

MIDI Time Piece™ AV 8x8 Mac/PC MIDI Interface



The MTP AV takes the world renowned MTP II and adds synchronization that you really need like video genlock, ADAT sync, and word clock sync, even Digidesign superclock!

FEATURES-

- Same unit works on both Mac & PC platforms.
- 8x8 MIDI merge matrix, 128 MIDI channels.

- Fully programmable from the front panel.
- 128 scene, battery-backed memory.
- Fast 1x mode for high-speed MIDI data transfer.

Digital Time Piece™ Digital Sync Interface



Think of it as the digital synchronization hub for your recording studio. The Digital Timepiece provides stable, centralized sync for most analog, digital audio, and video equipment. Lock together ADATs, DA-88's, ProTools, word clock, S/PDIF, video, SMPTE, and MMC computers and devices flawlessly. It ships with "Clockworks" software which gives you access to its many advanced features and remote control of some equipment settings such as record arm.

emagic Logic Series Software

MIDI/AUDIO/NOTATION software for Mac/PC

Below is a brief description of the three basic programs that make up the Logic Series of software, all are available for either Mac and Windows operating systems.

LOGIC AUDIO SILVER Powerful MIDI, provides up to 24 tracks of digital audio and built-in realtime DSP effects

LOGIC AUDIO GOLD offers more editing options with Event, Hyper, Score, Matrix, Arrange, and Emagic's revolutionary environment. With up to 48 audio tracks you have enough power to get serious.

LOGIC AUDIO PLATINUM Provides the entire combined feature set of the rest of the Logic series, 16 and 24-bit capable and simultaneous support of multiple third party hardware.



Pro Audio 8

MIDI/Audio Software for PC

One of the industries leading MIDI/Audio software with a wide range of hardware support and realtime automation and editing for Windows 95/98 and NT 4.0.

FEATURES-

- 24-bit/96kHz compatible
- 128 audio tracks, 256 Audio/MIDI tracks
- 256 realtime effects w/ 32-bit processing
- Vector based volume/Pan automation
- MIDI effects- quantize, delay/echo, trans-

- pose, arpeggiator
- 24 state notation w/lyrics, chord symbols, guitar chord diagrams and percussion notation
- SMPTE, MTC and MMC support
- Playback of .AVI, QT and MPEG video

Steinberg

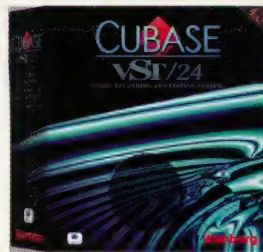
CUBASE VST Virtual Studio Technology

Steinberg's Virtual Studio Technology (VST) turns your PowerPC or Windows based computer into a music production powerhouse featuring digital audio, real-time effects, automation, MIDI and scoring in one single program. Expandable with software Plug-Ins and an audio bus system for use with the latest generation of multi I/O audio cards, Cubase VST delivers.

FEATURES-

- Up to 64 channels of digital audio
- Complete mixer with up to 4 EQ's per channel
- 4 inserts effects & 8 aux sends per channel
- All Realtime, Every action can be automated

- **CUBASE SCORE** adds professional score printing and layout functions
- **CUBASE VST/24** adds support of 96 audio tracks 24-bit/96kHz audio



PRODUCER PAC/24 For Mac Or PC

All the software you need to go from composition to CD. Based around Steinberg's cutting edge MIDI/AUDIO software Cubase VST/24 which supports 24-bit/96kHz audio files and upto 96 audio tracks. Support for all of the most popular audio cards and computer based workstations means that you can work with the hardware that's right for you.

FEATURES-

- **Cubase VST/24**
- **Wavelab (PC Only)**- 2 track editor supports upto 24-bit/96kHz audio files, DirectX and VST plug-ins allows you to create Red Book Compatible CD's
- **Prosoniq Sonic Worx Essentials (MAC Only)**- 2 track editing software supports 24-bit/96kHz files and real time VST plug-ins
- **Adaptec JAM (MAC Only)**- Red Book compatible CDR software

- **Waves Renaissance Compressor**- Opto & Electro emulation modes, Brickwall limiting, Warm character setting, Auto release
- **Spectral Design's FreeFilter**- 30 band linear phase filter, Spectral analysis, Learn & Morph modes imposes "Finger Print" of one audio source on another



O P C O D E

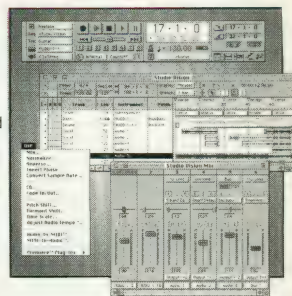
Studio Vision Pro 4.2

The newest version of this studio classic, Studio Vision Pro 4.2 incorporates many new features for the studio professional. Including enhanced 24-bit support for ProTools compatibility and a new MIDI event editor, you should see for yourself what's new at Opcode, the boys have been working overtime.

FEATURES-

- NEW look graphic interface makes it a pleasure to be working in front of the computer for hours (and hours, and hours)
- All functions are completely user definable through command keys/MIDI keys
- 24-bit support in DSP and playback means you have complete compatibility with the ProTools 24-bit system
- Stereo file support includes DSP processing
- Extensive NEW crossfade menus, vertical scaling of Waveforms and Strip Chart
- Ability to sidechain DSP plug-ins

- Non-destructive real-time Groove/Grid quantize
- Nudge events in both time and pitch
- Continuous controller oscillating tools
- Extensive new DSP preferences
- NEW pulse edit window
- NEW built-in arpeggiator uses quantize filters and records in perfect sync to your tempo map, runs entirely independent of your sequencer playing or recording
- Import and Export Quicktime 3.0 files.
- Much, much more...



Vision DSP Digital Recording Studio

Vision DSP provides support for Steinberg's industry-standard VST audio plug-in architecture, bringing extensive real-time effects to the Opcode product line. A vast array of user-interface enhancements make Vision DSP the most highly intuitive, visually responsive music production software available.

NEW FEATURES-

- VST Plug-in support
- Up to 16 buses for creating sub-mixes.
- Built-in 4-band EQ

- Pulse edit window & New MIDI arpeggiator.
- Expanded routing capabilities
- Extensive Audio hardware support.

Studio 64XTC Cross Platform Interface



The Studio 64XTC takes the assorted, individual pieces of your studio-your computer, MIDI devices, digital and analog multitracks and even pro video decks, and puts them all in sync.

KEY INFO #84

FEATURES-

- 4 in / 4 Out, 64 channel MIDI/SMPTE interface/patch-bay with powerful multitrack & video sync features
- ADAT sync with MIDI machine control
- Cross-platform Mac and Windows compatibility

- Simultaneous wordclock and Superclock output, 44.1kHz or 48kHz for perfect sync with ADAT, DA-88 and ProTools
- Video and Blackburst in (NTSC and PAL)

Classifieds

Categories

Instruments
Parts/Accessories
Acoustical Materials
Recording Services
Instruction
Websites
Sounds/Sequences/Software
Employment Opportunities
Records/CDs
Songwriting
Other

Instruments

Buying or selling instruments through our Classified Ads offers you convenience, a big marketplace, and a wide range of instruments and prices. However, buying mail order does have its drawbacks, too. Keyboard suggests the following guidelines to help the buyer and the seller in these transactions: 1) Get a written description of the instrument, which should include the serial number; 2) Get front and back photos of the instrument; 3) Get a written purchase agreement, with a 24-hour approval clause allowing the buyer to return the instrument for a full refund if it does not meet his/her reasonable expectations.

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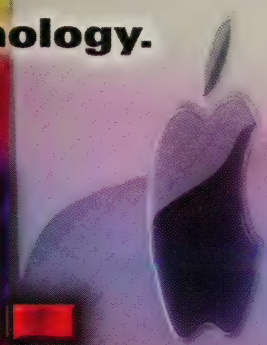
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Errrrr. . . Behold keyboardist **Derek Sherinian's** Hollywood Hills home studio, the Leopard Room. "It has two rooms," says Derek, "the control room, and the Leopard Lounge/ office. We soundproofed and put up tongue-and-groove wood in the control room, which was a bedroom. The lounge has a panoramic view of the Hollywood Hills and is covered in leopard and purple velvet. It's pretty obnoxious [*laughs*]. My friend Tom Fletcher dialed in the room acoustically so we could mix in here. My chief engineer Albert Law operates the studio and keeps everything running smoothly."

The Leopard Room is anchored by a Mac G3 running Digidesign's Pro Tools 5.0. "The Pro Tools rig is the way to go for me," Derek enthuses. "The flexibility of this system is awesome." The core synths in Derek's jungle are a Korg Trinity and Z1, Roland JV-2080 and JD-990, Kurzweil K2000, a vintage Wurliitzer, and a B-3. The Hammond's companion Leslie 147 is tucked away in an iso box and miked with a pair of Shure SM57s on top and an AKG D112 on bottom. "The Trinity has been my main ax for the last four years," Derek adds. "I love the joystick and ribbon controller. I just got a [Korg] Triton, which I'm just starting to dig into. It's the main controller to the module rack."

Speaking of which, Derek's rack "has two or three of almost everything! I believe that one keyboard can't do it all, and each of these modules has its specialty. The K2000 is great for strings and orchestral sounds; the Korg TR racks are for the leads; the [Korg] 01/WRs for

pads; the JV-2080s have all-around great sounds, as does the [Korg] Wavestation SR. More is more!"

Something you don't see in every keyboardist's studio is an electronic drum kit. Derek has a set of Roland V-Drums, which he says "is great for sketching out song ideas. I like writing with drummers, so it gives them something to jam on." (A complete Leopard Room gear list can be found at www.keyboardonline.com.)

"It's always been my dream to own a killer recording studio in my home where I can make records and not feel the pressure of the clock," Derek concludes. "It's so gratifying for me to be able to play and write music with amazing musicians, and record and mix it on state-of-the-art gear. I love being able to burn a CD after a session and crank it in my car. The view here is spectacular, and it's important to be in a relaxed environment when you're being creative. I use the Leopard Room primarily for my own musical projects, but I will book the room out to select clients."

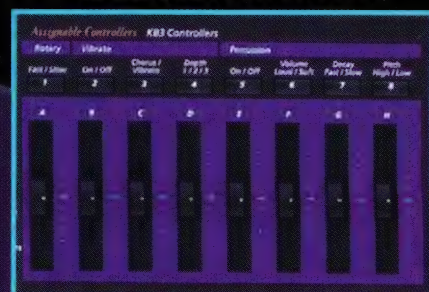


Since Derek left the band Dream Theater last year, he's been busy establishing his solo career with Magna Carta Records, and launching his new band, Planet X, which features Tony MacAlpine on guitar and Virgil Donati on drums. Look for their debut CD *Universe* later this year. You can contact Derek directly at DSherinian@aol.com or call the Leopard Room at 323-656-2200.

Do you have a home studio or keyboard/recording rig that deserves our spotlight? Send photos and info to Greg Rule c/o Keyboard, 411 Borel Ave., Ste. 100, San Mateo, CA 94402, or email to gregrule@mfi.com.

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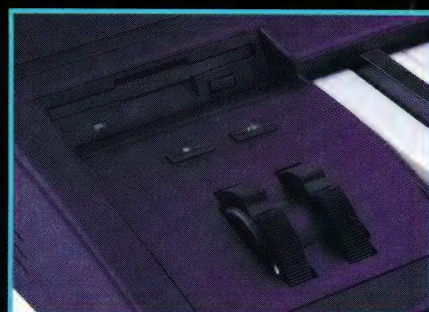
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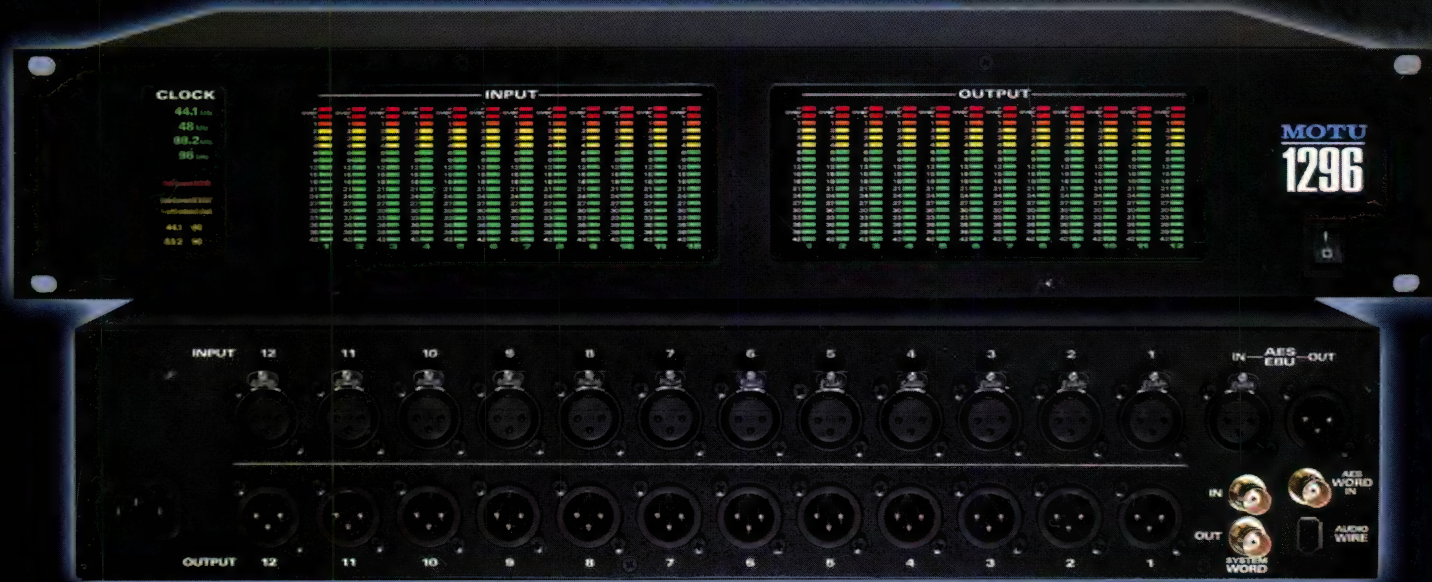
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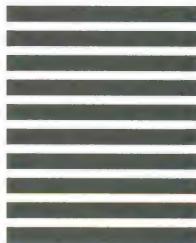
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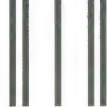
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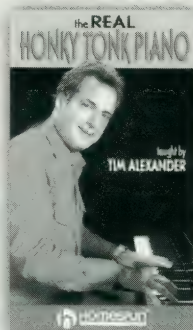
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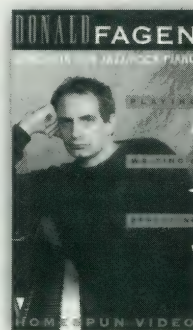
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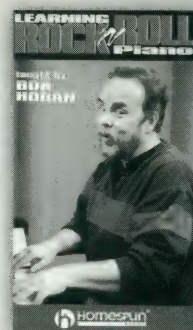
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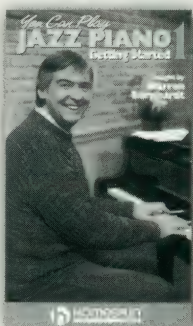


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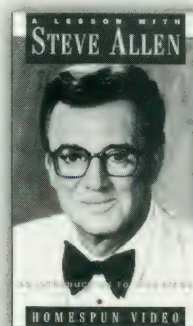


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workspace



ou're looking at the bedroom studio of one **Rob Hoffman**: producer, synthesist, songwriter, all-around superstar kind of guy in the L.A. scene. Rob was featured in our Nov. '95 issue for his work on Michael Jackson's *HIStory* CD, but that's just one of many projects that Rob has Hoffmanized. Most recently, he co-wrote, produced, and recorded the power ballad "Obvious" on teen diva Christina Aguilera's platinum debut.

About the studio, Rob explains that "up until this summer the whole studio was built into roadcases. During my Michael Jackson days I moved around a lot and the whole rig went with me. Everything was wired with Mogami [cable], and each rack came to a central patchbay. All the synths were normalled to Mackie 3204 line mixers for monitoring. When tracking, I took them right off the patchbay to Neve mic preamps, then to tape. During the Christina project I made the decision to move the studio to the permanent racks you see in the picture. All the wiring, Elcos [connectors], and patchbays stayed, and the roadcases were retired. I'm using ASC tube traps to smooth out the room. They make a big difference, especially in my little vocal booth."

Rob is an equal-opportunity synth lover, but does he favor one over the others? "Every synth has its own character," he says, "but I still can't get away from the Minimoog. I'll try to keep it off for a while, but then I'll come back to it when no other bass will work. It continues to be the most useful piece of gear I own. Bases, leads, running loops through the filter — it does it all. I'll even use it to multitrack pads and brass type stuff, a trick I learned from Steve Porcaro." Another dust-free ax is the Clavia Nord Lead. "It basically shows up on every track we write. Great for sweeps and wild, fruity effects. It really cuts." He also relies on the analog Jomox X-Base 09 for drum programming. "It's deep, but still easy to use. Very different from the other 808/909 copies. It's an inspiring box."

Rob's recorder of choice is Digidesign Pro Tools. "Pro Tools became a necessity. In Los Angeles it's pretty rare to do a record without Pro Tools being involved at some point. I tried a couple other systems, but in the end

I went with Digi." And while many PT users are content to mix on the computer screen, Rob favors hardware. "The Mackie D8B is amazing. I waited and watched the Internet newsgroups for about a year before I bought the console. It sounds great and is easy to use. I had to abandon some of the conventions I'd gotten used to using on analog desks, but after I figured out my own methods, everything was smooth. Many of projects I've done on it have received high praise from mastering engineers and clients."

When it comes to effects, Rob has plenty of software and hardware choices at hand. But there's one set of tools he's particularly jazzed about. "I'm loving these new Electrix boxes. They are literally changing the way I approach writing, tracking, and mixing. They just sound great! Everything syncs and is transmitted via MIDI. Super-easy to use."

What advice does Rob have for home studio owners? "Organization is the key. It drives me crazy when I go to other studios that have great gear, but they skimped on the wiring or patchbays. As an assistant in New York, I watched a lot of different session players come in, and I always checked out how their rigs were wired. When it came to wiring my rig, I took the best of their ideas and fused them together. Everything comes up in the patchbay, and I use Mogami and some Monster cable for everything. It's not cheap to get good cable, but productivity soars when there are no technical problems. At any given time I could be working on four or five projects. Just a few months ago we were in the middle of production on over 20 songs. You can't switch between projects like that without being organized."

To hear what Rob has done in this room, pick up a copy of the aforementioned Christina Aguilera CD, as well as the latest from Michelle Crispin on Rob's own Lovegroove record label. For a blow-by-blow list of Rob's studio contents, point your Web browser at www.keyboardonline.com. GREG RULE

Do you have a home studio or keyboard/recording rig that deserves our spotlight? Send photos and info to Greg Rule c/o Keyboard, 411 Borel Ave., Ste. 100, San Mateo, CA 94402, or email to gregrule@mfi.com.

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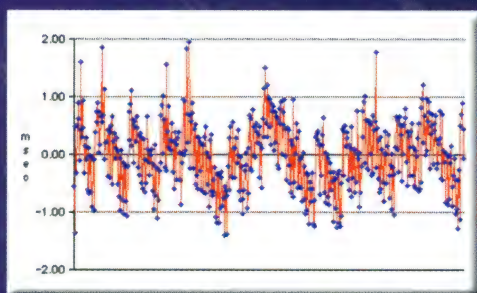
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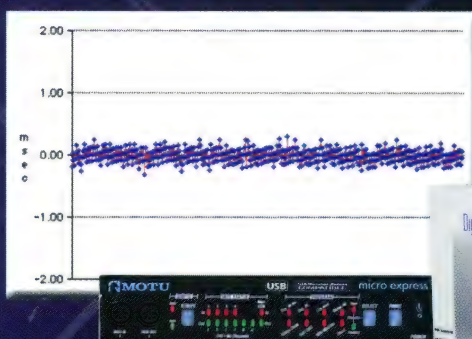
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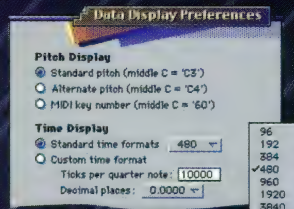
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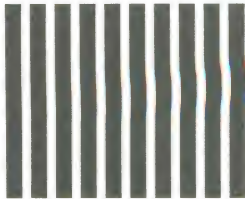
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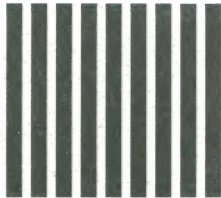
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